# The Builder.

VOL. XXXII.—No. 1616.


## *The Discoveries in the Troad.*

OUR readers have already been informed briefly of the remarkable discoveries in the Troad, by Dr. Schliemann, first made public in England by the conductor of this journal, at the Sheffield Congress of the British Archæological Association. Dr. Schliemann has just now given to the public a most interesting account of his three years' exploration. The treasures, disinterred from a site upon which the explorer insists Troy once stood, are second in importance to none of a similar kind.

The account to which we refer is contained in a splendid work issued by the publishing firm of Brockhaus, of Leipzig. An atlas comprising upwards of two hundred photographs of the objects dug up accompanies the text. Mr. Gladstone, who was favoured with a view of these photographs previously to publication, has expressed an opinion as to the exceeding importance of the collection to the archæologist, the philologist, and indeed to every lover of the "Iliad." Mr. Newton, the keeper of the antiquities in the British Museum, has started for Athens, where the objects collected by Dr. Schliemann, to the number of twenty thousand, are deposited.

Shortly after Mr. Newton's return we shall, of course, hear a great deal of these Trojan antiquities. Meanwhile our readers will doubtless be glad to have a condensed account of the information communicated by the author. These discoveries needed no adventitious circumstances to arouse general attention and interest; they are, however, likely to be connected with an eager controversy, on account of the conjectures and theories attached to them by the explorer. As yet there has been no collision of theories, although two distinguished men have spoken in the matter. Professor Max Müller scouts the idea that these relics are from ancient Troy, for the simple reason that such a city never existed, save in the legends out of which the grand Homeric poems were composed. M. Emile Burnouf, the director of the French School of Athens, takes another view, and appears to follow Dr. Schliemann implicitly.

The bases of the doctor's speculations are briefly these. At Hissarlik, in the Troad, he has been so fortunate as to excavate the remains of ancient life. He has come across vestiges of large buildings, and has turned up a great number of valuable objects exhibiting civilised design and workmanship. Among these objects, which are of baked clay, gold, and silver, have been found many vases and vessels bearing the likeness of an owl-headed deity. In this symbol the doctor sees typified Minerva, the patron-goddess of the Trojans. Some finely-executed objects in gold and silver have also rewarded the explorer's efforts. These latter, for reasons we shall presently mention, are stated to be "the treasure" of King Priam. Upon these discoveries Dr. Schliemann brings the whole story of the Trojan war within the domain of history. The "Iliad" to him is not a myth, but a veritable historical record, the peccadilloes of Paris and Helen, the sorrows of King Priam and his queen, and the glorious deeds of the Greeks are all literally true. In any case any controversy arising out of the Homeric poems cannot fail to be interesting and profitable to the reader.

It is unnecessary for us to express an opinion upon these questions; we can best serve our readers by laying before them an account of what these valuable objects consist, and the manner of their discovery. What is palpable and undeniable is, that Dr. Schliemann has brought up from the earth a large collection of relics of the highest value, and there can be no doubt that these disinterred remains belong to a far-distant and pre-historic period.

Dr. Schliemann, then, is convinced that he has discovered the site of ancient Ilion beneath the soil of modern Hissarlik. The ardent *savant* commenced his explorations in the month of April, 1870, and brought his labours to a brilliant termination in the summer of last year. During this three years' period the explorations were only discontinued in the fever season. The number of workmen employed in excavating the earth was sometimes as many as 150, and nearly 8,000*l.* have been spent in the work.

Over a large tract of the upper soil at Hissarlik were discovered *débris* belonging to the period of the Greco-Roman occupation. The space once covered by a city is surrounded by a fortified wall studded with bastions. He caused this wall to be laid bare in many places in such a way that he was enabled to construct a plan of the whole inclosure. In other places he sank shafts, to the number of twenty, down to the virgin rock. He thus discovered that the fortified wall and its foundations—the depth of which was 5 mètres—belonged exclusively to the Greek colony. The whole space was bestrewn with fragments of statues, and the objects in baked clay, which at the surface of the soil showed signs of belonging to a late Roman epoch, became, in descending, ruder and more archaic in design, and were evidently of a much earlier period. Some of these objects—vases and statuettes—were of most elegant shape; others of a very primitive pattern. None were of an earlier date than the seventh century B.C. Dr. Schliemann states his reasons for believing that this city was the one alluded to by Strabo, as being built about 700 B.C., which was destroyed by the Roman emperor Constantine II.

Our explorer next attacked a mound known as the Acropolis of Hissarlik, which rises from the plain, and commands a view of the Scamander, as well as a part of the Hellespont, of Tenedos, and of the Ægean Sea. The diggings carried on around this mound exposed the encompassing wall of a Greek city, built apparently by Lysimachus. Here was brought to light what he calls the "Hellenic bed," a stratum of the uniform thickness of two mètres. He resolved to search this stratum thoroughly. A trench was cut, the wall of Lysimachus laid bare, and, lower still, another wall was discovered. This second wall, exterior to the first, was used as the foundation of the upper wall and citadel, which had apparently been built upon its ruins. The objects found at this depth clearly indicated that the place had been inhabited before the foundation of the Hellenic colony, to whom the upper citadel had given protection. Dr. Schliemann was greatly encouraged by this discovery.

In the following year he opened an enormous trench, descending 14 mètres below the base of the mound. An examination of the vertical wall of this trench displayed, lying beneath the Hellenic bed, three distinct strata. The lowest stratum, which reposed on the virgin rock, was composed of earth, and of fragments of pottery and other objects; the second bed, several mètres thick, like the first, was entirely made up of red ashes and of calcined fragments, the evident result of some immense conflagration. Remains of brick houses were found in this layer, as also vases and other objects, all bearing marks of fire. The third stratum was composed of earth; the houses herein found were built immediately above those in the second bed, and were constructed of small uncut stone, joined with mud. The walls seem to have been plastered on the interior, but the exterior was left quite naked. This bed was generally about 3 mètres in thickness. A fourth bed, some 2 mètres thick, appeared to be a continuation of the preceding. Between this last-named layer and the Hellenic bed were found some vases, to which a Lydian origin has been assigned.

The enthusiasm of the explorer was still further roused by another discovery made in the same year. To the south of the first trench he made a fresh cutting, and came upon a wall 8 mètres in height, the base of which rested upon the rock. This wall, of enormous thickness, is held to be that of a bastion; and beyond this was found a door which gave access to the interior of the citadel, according to our author. In any case, abundant signs were displayed that here were the remains of a place of strength and importance. Dr. Schliemann declares it was a veritable palace and fortress, and the residence of a reigning chief. The tower, the gate, the palace belonged, by their position, to the era of the second stratum, the bed in which were found the red ashes and the calcined fragments. On clearing away the rubbish of a portion of this citadel, it was found that another palace had been built upon the ruins of the burnt stronghold. According to the practice of antiquity, the second citadel had been superimposed on the *débris* of the first; the second erection belonged to the third epoch, to that which succeeded the era of the conflagration.

A third cutting, running in a north-easterly direction, was executed in the same year. Here, again, the indefatigable explorer met with the reward due to his perseverance and acumen. A marble metope was brought to light. This metope depicts Phœbus driving four steeds in a chariot. Dr. Schliemann declares that the design of the horses recalls the memory of the animals of the Parthenon. Phœbus belongs to a type which points to an era bordering upon that of Alexander the Great. This metope, which is at this moment, with the rest of the treasures, in Athens, is held to belong to a temple of Apollo, which once existed in the citadel, but which has not yet been explored.

The researches carried forward in 1873 are not less interesting in their nature and results. The remains of a grand edifice of the Greek era were lighted upon. From an examination of the objects found in the interior, the explorer comes to the conclusion, that they belonged to a temple of Minerva. This temple was 80 mètres in length. In the course of his digging, Dr. Schliemann also happened upon the remnants of two houses,—one a tradesman's shop, or cellar, for it contained, ranged in an orderly line, nine enormous jars of baked clay, which had held either oil or wine. In a bed of red ashes he turned up the altar of Minerva, on which the people who had preceded the Greek colony had offered their sacrifices. This altar is formed of an enormous stone resting upon a brick foundation, and manifestly belonging to a town built of brick and not of stone.

Dr. Schliemann, having almost approached the end of his self-appointed task, was on the point of giving up his excavations, and of quitting the Troad, perhaps for ever, when a lucky prod of the pickaxe revealed treasures as welcome as they were unexpected. In a small quadrangular space were found lying vases and other objects in metal, all bearing marks of fire,

and sometimes even soldered together by the fierce heat. The quadrangular space had once contained a wooden box, which had been so completely burnt up as not to leave a trace behind. This glorious find consisted of vases of gold and silver, head-dresses, earrings, and bracelets of gold, and copper weapons of war. The spot where these treasures were found was just outside the palace, and it is assumed that the box was suddenly abandoned, as the violent raging of the fire gained upon the fugitives who bore the valuables.

The objects collected from their subterranean resting-places at Hissarlik, are upwards of twenty thousand in number. A detailed description of these antique treasures is impossible here, but a general idea of them may be imparted by classing them in groups according to their nature and uses. The materials in which the ancient people worked were not numerous, and they had made little or no progress in turning to account the forces of nature. Leaving out of consideration the objects in wood, and the textile manufactures which have been almost entirely destroyed, the only materials left are clay, stone, and metals, to which, however, must be added the skin and hair of animals, bone, horn, and rock-crystal. The mechanical appliances of the assumed Trojans were of the most rudimentary nature; the hand performed the chief part of the work. Most of their tools were of hard stone, a very few were in metal, whilst some were wrought from bone. They appear to have been entirely ignorant of any kind of turning-machine, even the pottery was modelled entirely by hand. After stone, fire was the principal auxiliary in the workmanship of the relics. Fire, besides being employed for domestic purposes, was used in the baking of clay vases, and in casting metal. It was, however, never utilised on a great scale, for there are no traces of a furnace in the beds at Hissarlik. Even the houses of this period are of unbaked bricks; and the brick supports of the altar of Minerva have never been subjected to the action of fire. These people were able, nevertheless, to melt large quantities of copper to form shields. Among the mechanical instruments, the stone implements are the most numerous; and among the objects for use, baked clay is the commonest material employed. The collection is very rich in stone implements, though vast quantities were left behind as unworthy a place among these antique curiosities. The silex saws are very fine; they are quadrangular in shape, and have one or both sides indented with very sharp teeth. The knives, or rather the long, thin, and sometimes curved blades which have been thus designated, are fashioned some of silex, and some of obsidian; a large number of them have serrated edges. There are likewise admirably-shaped hatchets and chisels, with smooth, cutting edges. Hammers have been found, with holes pierced for the handle. The perforation is thought to have been made by the action of sand and water. No handles for those tools have been met with; probably they were of wood, and have consequently disappeared in the conflagration.

The excavations have yielded mills, mortars, and pestles in numbers. The mills, or more correctly grinding-machines, are of trachyte. They are formed of two very large stones, convex on one side and flat on the other. One stone was firmly fixed in the ground, the other was moved backwards and forwards by the hands. Similar machines remained in use long after the invention of rotary mills, and remains of them have been met with at Pompeii. They are even used at the present day by the Greek women in some of the islands of the Archipelago. The pestles and mortars are of granite, and are only larger and exaggerated forms of those now in use. Nothing resembling a stove, or pan of terra-cotta, such as the Greek housewives of our own day use in baking cakes on the hearth-stone, has been found: it is inferred from this that the people of that far-off time were unacquainted with what we call bread, and must have treated farinacious substances in a totally different mode from ours.

Judging from the number contained in the Hissarlik collection, stones played an important part in the industries of the old city of the Troad. There are small pebbles of granite, rounded and polished in the river's bed,—these were used as weights. There are other and larger stones, all of them perforated, which may have served the weaver and the fisherman in their vocations. There are also many large cylindrical and conical stones, all of them worn and polished on the flat, lower face, proving that they were used for the purposes of a grinding-stone, or muller, as we term it.

To pass to the instruments in metal and bone. There are hatchets, long cutting blades, and chisels in copper, which in shape do not greatly differ from those preserved in the museums of pre-historic antiquities found in Western Europe. Some of these instruments may have been used in warfare, but the majority undoubtedly served the purposes of the workman. There is, however, a group of copper lances, battle-axes, and daggers, which were certainly warlike weapons. The utensils employed in the working of metal form also an interesting group.

Throughout the course of these diggings only four metals have been found—gold, silver, copper, and lead; but there is evidence that the inhabitants of the burnt city were acquainted with that elaborate alloy of gold and silver which the Greeks called *elektron*. Dr. Schliemann has discovered several beautiful examples of works executed in this alloy, notably a goblet wrought with the hammer in a series of spirally-disposed facets. The colour of this specimen is a pale yellow, of brilliant polish, and were it not for the hard knocks it has received in the process of excavation, it might be supposed to have just left the hand of the workman. Some of the copper is now being analysed by two eminent French metallurgists, for the purpose of discovering any admixture of tin. Lead has been met with, but only in rare instances; iron is entirely absent. If it ever existed, it has totally disappeared under the oxidising action of the soil during several centuries.

Most of the vases found throughout the entire series of beds, from the rock to the Hellenic stratum, were fashioned out of the clayey earth of the country. This earth is often red, but sometimes grey or yellow. The potter worked his clay solely with his fingers. His knowledge did not permit him to press into his service any mechanical auxiliary. When the vase was half dry, he polished it with a stone burnisher, and this polish the vase retained after it had been baked. Every one of the terra-cotta objects prepared in the way we have stated bears the mark of the burnisher, and a large quantity of these tools are included in the collection. Subsequently the lathe, in its rudest and most primitive form, appears to have been introduced. The objects fabricated by its aid are on a larger scale than the others; but the roughness of the workmanship during this period testifies either to the imperfection of the new machine, or the awkwardness of the potter in using it; on the other hand, the vases and other objects shaped by the fingers only, and afterwards smoothed and polished by the burnisher, display the most elegant form and the most careful manipulation. Thus the fourth period of the pre-historic antiquities of Hissarlik has been designated by Dr. Schliemann, the "period of burnished pottery." It must be remembered that the most ancient forms of Greek pottery were shaped on the wheel. The ornamentation of the Hissarlik terra-cottas is very rudimentary. Not a trace of painted design has been observed upon them, the embellishments consisting only of sinuous lines, zigzags, and what the discoverer by a stretch of imagination calls symbolical figures. All these lines were indented in the soft clay as it revolved on the wheel.

Just a few words respecting the forms of these vases. In Dr. Schliemann's "Trojan Museum," as he himself styles it, there are a few exceedingly large vases, of a capacity of many hectolitres. These massive vessels are of the shape of the well-known *amphoræ*, terminating in a point, and therefore inserted in the ground to keep them steady and upright. The other vases are of various kinds: there are vessels for containing beverages for the table, vases for culinary purposes, vases to which no use can be assigned, but which, perhaps, were employed as ornaments. The whole series of vases is as abundant as it is diverse in character. In one kind of vase, or rather drinking-vessel, the learned and imaginative explorer contends that he has introduced to the modern world the celebrated *depas amphikypellon* (*δέπας αμφικύπελλον*) of Homer. This goblet played a principal part in the honours of the feast. The host, taking it by one of its two handles, drank first, and then handed it to his guest, who, according to the etiquette of the heroic period, emptied it at a single draught. These goblets were always of a fantastic shape. Host and guest drank from two different spouts, hence they were often boat-shaped: from the small end or prow, the host sipped; from the capacious, broad, stern end, the guest drank deeply, in accordance with the custom of the period. Another form closely resembles the elegant water-jugs with long necks found on modern tables. There is a kind of vase which has been modelled in imitation of a female face. In Dr. Schliemann's opinion these vessels carry with them the highest historical importance. In proceeding, however, to details, we learn that the assumed feminine head is half-transformed into that of an owl. Upon this narrow foundation the German *savant* builds up an enormous amount of theory. In the conformation of these vessels he feels himself constrained to believe that he has discovered the symbol of a deity. The Homeric epithet, *glaucopis* (*γλαυκωπις*), so constantly applied to Minerva, taken in conjunction with the fact that the goddess, as tutelary deity of the Trojans, bore the head of an owl, suffices to carry conviction to the mind of the explorer that these vessels were formed after the lineaments of the protecting deity of the Trojans. Reasoning in this way, the Doctor is more than ever convinced that Troy once existed, and that he is the supremely fortunate discoverer of its ruins. All the prehistoric beds have furnished examples of these owl-faced vases; but the bed which has been subjected to the action of fire has yielded the greatest number.

The explorer refers with pride to that portion of his collection which he calls "the treasure." All the objects composing this were, according to the Doctor, originally contained in a wooden box, which, as we have stated, he supposes to have been burnt up in the conflagration which destroyed the royal palace. With this treasure was found a large copper key bearing a close resemblance to the key of a modern strong-box. A short account of these much prized objects will not be out of place as a conclusion. There are fragments of swords and implements of war, fourteen axes, seven double-edged daggers, and thirteen copper lances. Next follow a silver dish and two small silver vases, which the discoverer calls magnificent in their workmanship. There are also a silver goblet, and three large silver vases, which all possess the peculiarity of being rounded at the base, and therefore could not be stood upon the table. Next follow six large blades of an alloy of gold and silver, and well-wrought with the hammer. A similar mixture of gold and silver occurs in a small goblet 70 grammes in weight, provided likewise with a stand so shaped that the goblet could not rest upon it without being reversed. The gem of the collection is the *depas amphikypellon*—the drinking-goblet to which we have already referred. It weighs 600 grammes and is all of pure gold. The other vessels appear to have been manufactured with the hammer, but this one has been cast. This splendid vessel has also a stand, which only supported it when placed mouth downwards, consequently only when it was drained of its contents. The treasure likewise contains a globe-shaped bottle weighing 403 grammes, and a goblet weighing 226 grammes, both of pure gold. Then there is a copper-plate to which is fastened a silver vase by the effect of intense heat; as well as a copper vase, kettle, and shield. Outside the box, or rather the quadrangular space it is supposed once to have occupied, a helmet, a silver vase, and a goblet, were picked up. The discoverer conjectures that the helmet belonged to the person who had deposited the box and who was endeavouring to escape the conflagration.

## TRADE UNIONS' CONGRESS.

THE meeting of the Trade Unions' Congress at Sheffield, which commenced its sittings in the Temperance Hall in that important town on the 12th of January, is a matter of too much magnitude to be passed over altogether in silence. And we think that even those whose blood is stirred by the word "union," almost as the ire of a bull or of a turkey-cock is awakened by the flourish of a red silk handkerchief, must admit that a certain gravity, moderation, and sense of responsibility have marked the proceedings, which form a striking contrast to certain debates at Geneva, to which there has been a strong effort to procure the adherence of the working-classes of this country.

Amongst the leaders of the movement, and chief speakers at the series of meetings, we observe only two members of the existing Parliament. But we also observe the names of not a few thoughtful and practical men, in whom it

may be safe to predict that we recognise future members of the House of Commons. The efforts made, for example, by Mr. Macdonald, to insure the direction of the best available literary talent of the country to the elucidation of the subject of trade unions, deserves respectful mention by men of letters. It is, indeed, almost a tradition of the craft that prize essays are never essays worthy of the crown. No small degree of experience confirms this view. Yet it is difficult to understand why it should be a part of the nature of things. There can be no doubt that a far better result will be obtained by the method of commissioning a thoroughly competent man to do a requisite piece of work, than by advertising for persons to prove their competence by voluntary performances. From such an invitation the best men generally shrink back. But yet it is the object of the advertisers to discover who these best men are. And, however often the attempt may fail, we are not prepared to say that it can never succeed. It is like the practice of architectural competitions. This invokes many evils; great consumption of time, cruel disappointment; much, very often, that savours of imperfect justice, if not of job. Yet it is a tentative method that so continually suggests itself to men who are called on to decide on questions such as those connected with new and important buildings with which they have no practical acquaintance, that it seems useless to attempt to stem the current.

The main object which the Congress appeared to have most at heart is the regulation of the statute law affecting the relation between the employers and the employed. This subject is one that cannot be blinked. It is one which is evidently a primary pre-occupation of a very large mass of the population of this country. Opinions, or (what are often very different things) professions, and pledges, on this subject, are most likely to have a very appreciable influence on the decision of the next election. It is thus of great national importance that the question should be approached in a dispassionate spirit. It is a subject on which no legislation, that is projected and enacted according to our present Parliamentary practice, can by any human probability prove satisfactory. It is pre-eminently a matter for that ancient constitutional method of proceeding in the first place by resolution, to which we think the increasing pressure of business and detail will, sooner or later, compel Parliament to resort, as the basis of anything like organic legislation.

The key to such a solution of the question as is demanded by, and for, the welfare of the country is this,—there must be a clear, mutual understanding; there must be no beating about the bush; no attempt to steal a march. The time has come when England has a right to know distinctly what her working-classes really demand. On this demand must be passed the sentence, not of Unions or Federations, not of Senate or Cabinet, but of the general assent of the educated majority of the nation. If right and justice are all that the workman seeks, let it be distinctly known that such is the case. Counsel may be heard in opposition to the claim,—in fact, ought to be, and will be so heard,—but the decision may be confidently anticipated. On the other hand, if the workman demands not right, but power; not justice, but dominion; it is well that this should be also plainly understood. The men who hold such demands to be fatal to the welfare and stability of England will join direct issue; and the result, if less easy to predict, will be certain of accomplishment. Is the great national bundle of sticks to be bound together in the golden hoop of intelligent and enlightened fraternity? or will each minor faggot elect to stand on its own strength and merits? In the latter case, that grim woodsman, national decay, will pick us up, stick by stick.

The point which strikes us as the most obscure in the whole matter, and therefore as the most certain and fruitful source of misunderstanding and of quarrel, is this. What is equality before the law? This, we all admit, is the birthright of the Englishman. So far we all go together. We would take it from no man. We would give it to every man who has it not. But, in order to do so, it is necessary to know what it is.

We shall endeavour to make this matter extremely plain and clear. For it is no less difficult than important. If we dismiss the idea, as unworthy of honest men, that the members of these two great interests (into which we mourn to see the great republic of labour more and more distinctly divided from day to day) are plotting against one another, anxious to snatch from Parliament a hastily tinkered weapon which may serve one side better than the other; if we dismiss this idea,—we shall be forced to admit the vital importance of the inquiry. "I want only what is right," says each of a pair of sturdy disputants. "Fight it out, then," says the professional backer. "Let us see what right is," says the friendly arbiter.

Equality before the law does not mean the invariable application of the same measure to every man, whatever be his size. Equality, to be true and real, must take fair account of all circumstances. That will be evident if we look at the case of a pecuniary fine. Let us say that an act prohibited by the law,—take, for example, the stealing of bread from a baker's basket,—was punishable by one certain mulct. Suppose that the fine was a pound, and that the alternative, in case of non-payment, was the infliction of three months' imprisonment, with hard labour. Let the penalty apply to the theft, whether it were of one loaf or of the whole contents of the basket. Can anything be more equal?

Yet, see how it would work. It would give impunity to the rich man, who had no temptation to steal; it would strike with a severe stroke the poor starving man, who had the strongest temptation to do so. Suppose a rich man had a grudge against the baker, and felt that he could ruin him by inroads on his basket. He could calculate the exact cost to himself of the indulgence of his spite, and might rob basket after basket, paying his legal mulct with the utmost composure. To the poor man, driven to appease the cravings of hunger, one offence would ensure the gaol, because he could not pay the mulct. In its operation, on the rich man and on the poor man, the penalty which, from the baker's point of view was so just, equal, and impartial, would be terribly disproportionate. Under the form of perfect equality we should have substantial injustice.

It is thus evident that the establishment of a fine, or pecuniary penalty, by way of punishment for a definite offence against the law, may weigh most unjustly upon the rich man and the poor man. The latter is apt to understand this. His instinct is awake in the matter, and, under nominal equality before the law, he is conscious of actual injustice.

In the case we have put the injustice pinches the poor man. But the converse is no less possible. Take the case of a large employer of labour. He may have embarked in his business the result of the anxious labour, not only of many years, but of several generations. His education, his habits, perhaps his infirm health, make him dependent on a certain amount of luxurious comfort which the hardy soldier of labour could never miss; amid which, indeed, he would feel himself, for a time, far from being at home. His children's heritage, his wife's dower, the provision for his declining years, the deposits of his friends or of his dependents, are all involved in the capital of his great industry. He drives a good business; meets the weekly need of a large pay-bill; and is a wealthy, thriving man. Certainly, whatever else he may be, such a man is a very useful member of society; and has a right to the equal protection of the law.

It is of the essence of a great business, such as we have supposed, to deal by way of contract. A certain amount of confidence in the future is necessary for the execution, for the very existence, of contracts. A man undertakes to deliver so many thousand tons of rails, within a definite time, at a price which affords him a fair profit. He agrees to pay a penalty in case of non-fulfilment, which would swallow up all that profit; or which, if incurred, may even be ruinous.

Now if this man have engagements standing with his workpeople, on the strength of which he enters into those gigantic operations which are necessary for the conduct of the business from which they all derive their maintenance, it is clear that the legal definition of a certain moderate penalty, to bear on both parties alike, for the breach of that agreement, does not affect both parties equally. Let us suppose that the fine in this case, as in the other, were a pound. Industry on the part of the workman is an essential part of his performance of the compact. But suppose the employer to take a dislike, deserved or undeserved, to an industrious workman, or to a dozen of them? He can order them to walk off his premises, pay down his pound apiece, and there's an end. The man receives the forfeit, takes his turn elsewhere, and the matter rights itself.

Turn the picture. The workmen obtain an idea that their employer is under heavy penalties. They think they can obtain an advance of wages. They break their contract with their master by a strike. They know the utmost they can be called on to pay, and the union thinks it worth while to stand the risk. The employer is put in a cleft stick. No pecuniary penalty for breach of contract that any existing legislation will sanction can be equal in such a case as this. To make the employer equal before the law with his hands, something must be available that is more adequate to his protection than a slight pecuniary fine.

To propose to remit the decision of such a case to a jury, is simply childish. If it were possible in the crowded streets of a manufacturing town to hold a court of *pie-poudre*, to seize the first dozen passers by, and empanel them into a jury, that should give its verdict with the promptitude of a drum-head court martial, it might be by far the best plan. But this cannot be done. The liberty of the subject is surrounded with so many guarantees, by the jealousy of our sturdy ancestors, that the value of time has been left out of sight. What with consulting a solicitor, who would demand time to take counsel's advice; then obtaining a summons; having a hearing before a magistrate, and finally having the case remitted to the sessions or the assizes, the master would be a ruined man before his complaint could be even heard. And if it were heard, found to be just, and satisfied, according to the law, by an order on each of a thousand workmen to pay a pound damages, what recompense would that be when obtained, for the actual damage and loss? In a case like this, the power is so disproportionately on the side of the many, that it is a mockery to speak of the enforcement of a definite and equal penalty as giving equality before the law.

The case would only be complicated if more were left to the discretion of the magistrate. To do this would be to throw on his shoulders a responsibility which is properly that of the Legislature. We do not speak of the invidious position in which the magistrate would be thus placed. He sits on the bench to do his duty, and not to do what is agreeable to himself. But it must not be forgotten that anything that tends to place a magistrate, unavoidably and repeatedly, in a false position, detracts from the dignity of the bench, deters the best men from accepting it, and is thus against the public welfare. In the fiercely-debated questions to which we refer, the just care of the upright magistrate would be, that his decision should be entirely within the four corners of the law; that it should be such as could not be challenged. The idea of going into the merits of a case, as if he were an arbitrator, and apportioning to each man the degrees of blame and of punishment that he accurately deserved, is not one that could be entertained, in such a case, by an upright magistrate. The more vague was the law, the more timid and cautious would he be in its application.

The fact is, that it is one of the first lessons learned with the increase of any population, that there is a difference between dealing with individuals and dealing with numbers. That one head can direct, and one hand execute, with the power and authority entrusted to the magistrate by the many, better than the whole mass can deliberate, decide, and act, is the letter A of the alphabet of civilisation. For the common safety, and for the common welfare, such a man is armed with the power of many men. In war this is most evident. There the safety of every soldier, and of all those whom soldiers are arrayed to protect, depends on the absolute supremacy, extending to the power of life and death, of the commander. An army that should propose to proceed on the principles of the equality of every soldier before the law, and of his right to give his opinion in each case, and, what is more, to act upon it, would be nothing but food for powder,—if even it got so far as to see the muzzle of a hostile gun. In all common enterprise, unity of direction is a vital necessity.

This great truth applies to the relations between the owners and the occupiers of labour. In that great army the utmost freedom of volunteering is proper, and is prevalent. But a volunteer who asserts his right to throw down his musket the moment that the heads of the enemies' columns come in sight, is not only a coward and a traitor, but a mischievous public nuisance. And what applies to the struggle of

man against man, applies, with certain modifications, to the struggle of man against time, against cost, against the opposing forces of nature.

We hope that, therefore, the intelligent men who are assuming a tone so much more cautious and practical than that of some former utterances, will go heartily and thoroughly with us. If so, they must go a step further. The practical outcome of these considerations is this. In each great industry, according to its requirements, employment is a matter of contract. Let that contract be at once perfectly free in its inception, and perfectly binding when entered on. Time, we have seen, is of the essence of these contracts. The manufacturer who takes upon himself the responsibility of executing a large order, for a definite sum, to be completed by a definite time, can only do so,—if he is a sane man,—on one of two conditions; the first is, that the labour which he requires for the fulfilment of his bargain is so abundant, and so certain to be obtained at the market price, that he need not trouble himself to make any bargain with his hands. Such was our experience, years ago, in the construction of the railways of this country. Legions of sturdy navvies were always wandering through the country. Contract between the navvy and the sub-contractor was of the very simplest kind. "Have you any room, master?" asks the new-comer. "Where is your shovel?" was the reply. "I have none." "Go to the shop, get a shovel, and I shall see what you are worth." From intimate acquaintance with this system in operation we can bear witness that, whatever was its effect on the morality of the navvy, it gave, as a rule, universal content.

This absolute freedom—or rather this extremely brief period of contract—does not apply to more settled industries. There the workman has to be protected against chance or caprice. The question of home, and of home for wife and children, arises. The turf shanty of the navvy is not forthcoming. If it were (warm and snug as we know it to be), it would be despised. It is only a glorified bivouac, and the English operative wants a brick-built house. It is thus in the interest, both of the operative and of the employer, that their contract should run for a definite time. Whatever that time may be,—a month, three, six, twelve months,—the one great requisite is, that both parties should be able to rely on its fulfilment. To this end the sanction of the law is requisite; and that sanction, to be a veritable sanction, must be calculated to attain its end. It is not the imposition of a fine of a few shillings on either party for the breach of contract that can attain this end. Such a proposal is too childish to discuss. There must be efficient protection to the employer against breach of contract on the part of the large numbers of men on whose united aid, under contract, he relies, as well as for the operative. And this is necessary, not in the interests of the employers, but in the interest of the trade. Unless this can be ensured, trade will leave our shores.

We cannot but think that this is the very back bone of the whole matter. Combination—conspiracy—strikes—all these ugly words come to this. No one can compel another to labour The owner of the labour can do as he will with it. But, if he sell it for a fixed time, the law must hold him to his bargain. It must do so by means that are effectual; that is to say, by means that are disagreeable. The law must make the breach of contract on either side so painful to the offender as to deter him from the repetition of the offence. The effectual character of the remedy is the true object—the true requisite for national welfare. It is not a nominal, but a real equality before the law that is right, and just, and wise.

If our friends on both sides of the dispute will patiently go thus far with us the dispute is at an end. Anything else is matter of detail, and can be arranged by amicable discussion. Any new legislation can be proposed by common accord.

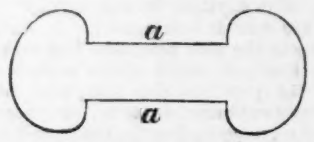
But if, such being the real truth of the matter, both parties blink it; if each seeks to snatch an advantage; if legislation is proposed as a class object, or discussed with the real gist of the matter carefully kept out of sight; then is evil before us. The equality that we seek before the law is not the equality of a herd of savages, but that proper to a highly complicated state of civilisation. That once accepted all round, misunderstanding will be altogether at an end.

## STRENGTH OF PORTLAND CEMENT.

SIR,—I send you the results of some tests of the tensile strain borne by Portland cement *pure*, and *mixed* with different proportions of sand; and as this cement is now much used by persons little acquainted with its properties, I trust the information may be of some value.

The cement tested was manufactured on the Tyne, and such as I am daily using in the New Quay and other works here, and is what would be called *slow-setting*. The sand used was ordinary river-sand, not selected, so that the experiments might be useful in every-day practice. And I may say, that for the last ten years I have never permitted any cement to be used till it has been tested, and has borne the requisite strain; and if this was more generally insisted on we should hear less of the failure of works where this very valuable (but treacherous where not carefully watched) material is employed.

The test-bricks shaped thus, with a cross




sectional area of 2½ superficial inches at the neck *a a* (that is, about 1¼ in. square) were cast in iron moulds, and removed as soon as possible without destroying the cohesive properties of the mixture, and then placed in water till required to be tested. This was performed by a machine made for the purpose, which grasps the shoulders at each end of the neck, and strains the brick till it breaks by a tensile or pulling strain.

The test-bricks of pure cement were removed in two hours after being made; those of one of cement and one of sand in twelve hours; those of one of cement and two of sand in twenty-four hours; and those of one of cement and four of sand in sixty hours.

*Table of Tensile Strains described as above.*

| Age when tested. | Pure Cement. | One of Cement and one of Sand. | One of Cement and two of Sand. | One of Cement and four of Sand. |
|---|---|---|---|---|
| Days | lb. lb. | lb. lb. | lb. lb. | lb. lb. |
| 7 | 830 and 720 | 550 and 540 | 375 and 340 | 77 and 70 |
| 14 | 890 ... 740 | 535 ... 500 | 350 ... 340 | 154 ... 94 |
| 28 | 935 ... 520* | 595 ... 535 | 359 ... 359 | 133 ... 112 |
| 56 | 940 ... 930 | 630 ... 577 | 406 ... 388 | 135 ... 121 |
| 112 | 1065 ... 1055 | 859 ... 837 | 580 ... 565 | 224 ... 224 |

* There was a flaw in this brick.

It would appear from this that the difference in the strength of the pure cement one week old and four months old is only 36 per cent.; the difference in the strength of the mixture of one of cement and one of sand, one week old and four months old, is 55 per cent.; that of the mixture of one of cement and two of sand 60 per cent.; and that of the mixture of one of cement and four of sand upwards of 200 per cent. Looking at the great increase during four months in the last-mentioned mixture, it would appear as if it ultimately would become as strong as the pure cement, and this is no doubt the case. In a practical point of view, however, it is most important to note the rapid deterioration in strength (at seven days old) the test-bricks undergo as a larger quantity of sand is used; those having a mixture of one and one being 7-10ths the strength of the pure cement; those of a mixture of one to two being 4½-10ths the strength of the pure cement; and those of a mixture of one to four being only 1-10th the strength of the pure cement; which would point to the advisability of using not more than two of sand to one of cement, in work required to set quickly.

I would just point out in conclusion another feature of importance. The mixture of one to four when seven days old is only one-tenth the strength of the pure cement (as noticed previously); but at the end of four months it will be seen it had so far overtaken or gained upon the pure cement, that it had risen to one-fifth the strength.

JOHN LAMB.
Corporation Property Surveyor's Office,
Newcastle-on-Tyne.

**Exeter City Surveyorship.**—There were 78 applicants for this appointment. Mr. H. P. Boulnois was elected.

## THE LANDS CLAUSES ACT.

INSTITUTION OF SURVEYORS.

AN ordinary general meeting of the members was held last Monday evening, the 19th instant, the president (Mr. E. Norton Clifton) in the chair, when the discussion was resumed on the paper which was read at the last meeting by Mr. Philbrick, Q.C., on "The Lands Clauses Consolidation Act, with some Suggestions for its Amendment."

Mr. Ryde, in opening the discussion, said that Mr. Poilbrick, at the close of his paper, expressed a hope that, while suggesting amendments, the main principles of the Act must be preserved, in consideration of their practical utility and tried worth, a hope which he (the speaker) cordially concurred in. This Act, he thought would go down to future generations as a carefully-constructed Act in many respects, bearing evidence of its practical utility. By the common law of the land, no subject of the realm could be compelled to part with his property to any other subject; but the first person, perhaps, who ever had compulsory powers granted, for the purpose of taking land compulsorily, was the Baroness Burdett Coutts in the case of the Columbia Market. The compulsory powers given in the acquirement of land have concerned streets, water companies, gas companies, drainage, sewage irrigation, railways, and embankments. In the earliest statute of this nature, the New River Company's Act (1605), the owners of the grounds through which the river passed were compensated, it was stated, to their "contentment"; but in the present day such a thing would be a hopeless task. In these days, however, the matter was left "to the practical good sense of the Commissioners to do what they might think fair in each particular case." He always had thought that some measure might be adopted whereby in railways made the lands taken could be benefited, and be able to contribute towards the expense of their making. As regarded the compensation for the value of the land, the Act, as it at present stood, he thought, would answer, and if they attempted to legislate further, only harm would accrue; and in his experience the Act worked well in its present form. He would not give companies the power or right to compensation, but he saw no objection if there should be provided a machinery by which the right to compensation would be first tried. No compensation ought to be claimed merely for the diversion of the street traffic, for if it were allowed where was it to cease? There should be more care exercised, he was of opinion, in laying out the land, for engineers did not regard property at all, but ran through anything that came in their way. In this respect there was great need of reform. Section 22, which dealt with cases where purchase-money and damage as claimed did not together exceed 50*l*., and remitted such claims to the settlement of two justices, was, he thought, a useless section. He fully agreed with Mr. Philbrick as to the abolition of section 33, which compelled the arbitrators and umpire to make a statutory declaration that they would act faithfully and honestly. Speaking of the vexed question of costs, he said that it was a tender point that the masters of the superior courts of common law should tax the costs. The great good of the proceedings under the Lands Clauses Act was, that they were final; and a great injustice would be done if this was not so.

Mr. Horatio Lloyd, Q.C., said that it was quite impossible in a single meeting to discuss individually the different sections of the Act, for it would occupy too much time. The practical matter they had to deal with was to look at the Act as it stood. There were objections to the Act, and some very striking ones, indeed; and it was his intention, at some future time, to go through the Act, and to suggest what appeared to him its defects, and to propose remedies, to be brought before a meeting of this institution with a view of framing a Bill for Parliament. In many respects he differed from the conclusions arrived at by Mr. Philbrick. The basis of the right to compensation depended upon the Railway Clauses Act, and not as Mr. Philbrick supposed. The Lands Clauses Act merely prescribed the mode in which compensation was to be assessed. With regard to the question of principle, Mr. Philbrick had rightly distinguished as to that which involved the purchase of land and that which was the compensation for the damage which resulted to persons. With regard to the per-centage added upon a compulsory sale according to the principles laid down by the

Act, they were to assign the full value of that which was to be purchased. In giving the full value, on what principle were they to add the further per-centage of the property taken by compulsion. As respected the taking of the land by compulsion, most important distinctions should be made. If a person had his property in the market, he (Mr. Lloyd) never could understand, when the full value was estimated, why the per-centage was added at all. It was quite monstrous that there should be one uniform amount of per-centage given in all cases of land which was in the market for the purpose of being dealt with in purchase, and he regretted that this rule was now becoming inveterate. Speaking of the question of the jury for the awarding of compensation, he thought that a more incompetent tribunal to treat of these matters than jurymen he did not know; they knew nothing of the value of property, and were often liable to be prejudiced, topics being introduced by opposing counsel of totally an irrelavent nature.

Mr. Beadel was of opinion that there were many things in the Act which operated with prejudice to the claimants and also to companies. It was within something like thirty years since the Lands Clauses Act came into operation; and in the working of it there had unquestionably been great injustice done. He differed from Mr. Lloyd's views regarding the per-centage upon a compulsory sale; and to him (the speaker) it seemed only right and reasonable as far as compulsory sale was concerned. He agreed, however, with Mr. Lloyd that the jury was the worst tribunal before which compensation cases could be determined. He contended that there could be no tribunal so perfect as referring the matter to arbitration, a fair value in such cases being always given for the property. If the surveyors of England would set apart the unfair regard they had for the clients they represented, and look at the questions involved in an honest way, he believed that a great number of the questions which now went to arbitration would be prevented from going to arbitration at all.

Mr. Shield thought that the view of assessing the compensation first, and trying the matter afterwards, was a technical blemish; and, if only in this instance, there was a crying remedy needed. He, with the previous speakers, was largely impressed with the inability of jurymen to try compensation cases; and thought that some remedy in this respect should be proposed.

Mr. Driver said that the Lands Clauses Act, which had been established for so many years, showed that the promoters of it were men of great ability. With regard to the court of appeal, he thought that it was a fearful thing for the claimant, after he had gone through the great costs and expenses of a trial, to have the case disputed upon some technical point to oppose the verdict.

On the motion of Mr. Marriott, the further discussion was adjourned till the 2nd of February.

## HOW THEY MANAGE THINGS IN JAPAN.

IT would appear as though in Japan they do not carry out their public works in a very systematic or methodical way. We learn that the Japanese Government have recently had some works to carry out in Tezo, and seem to find a difficulty in controlling the outlay of their officers. A peculiar illustration of the way they manage things may be given. Four "strong and durable" piers have recently been constructed in Tezo;—one at Mori of 500 ft. in length, and three on the Ishi Kari river. At the end of each of these piers the greatest depth of water is 7 ft.; so that, although each of them is estimated to have cost not less than 100,000 dollars, they are one and all entirely useless, and do not afford facilities even for loading junks, much less larger vessels. The junks could not be brought alongside the pier at Mori even in calm weather. The construction of a road, too, from Hakodade to Sapôro is said generally to have cost the Japanese Government more than double the actual outlay for the labour and material which were expended on its construction, this result being arrived at by comparing the numbers of labourers employed, as noted by the American officers, with the cost of labour said to have been charged to Government. The road is said, on good authority, to have cost about 300,000 dollars, while the Government have paid 800,000 dollars. These are only two instances against many which might be quoted, showing the absurd manner in which public money has been expended in carrying out public works in Japan. The Hakodade road above alluded to has been constructed in itself in an admirable manner by American contractors, and does not show a single slip notwithstanding the rapidity with which it was carried out, and the heavy rains to which it has been exposed. Another somewhat important work is the construction of a line of telegraph between Hakodade and Mori, which will be carried along the road to Sopôro. The last-named place is the chief town of the island of Tezo. It covers about a mile square and is situated on a fine plain. The town has been laid out with a view to its future importance, and contains a Government house, several Japanese hotels, a number of houses of superior construction, for the use of Japanese officers, and still better houses for the gentlemen of the American mission. The streets of the town are broad and well made, and there are a hospital and other edifices of a public character.

## NOTES FROM DUBLIN.

IN the Corporation a persistent attempt was made to continue the Main Drainage Committee as a permanent one, but the efforts were frustrated by a motion by which six members by ballot were elected from the late committee, and six from the several members of the house. This proceeding has given an infusion of new blood to the constitution of a committee which long stood in need of it.

*In re* the water supply, the civic body has raised a storm about their heads by the promotion of a Bill which some think prejudicial to the interests of the inhabitants and the townships. The water supply of Dublin is good, but it has been a most costly affair, and it will be many years yet before Dublin wipes out the load of debt and taxation that attaches to it.

The rebuilding of the new Essex Bridge over the Liffey, connecting Capel-street on the north, with Parliament-street on the south side, is progressing. The old foundations will be utilised, and it is expected that the bridge will be ready to be opened for traffic in October next. A temporary foot-bridge has been erected on the western side of the works, and opened for passengers on last Saturday.

A number of sanitary cases have been heard within the last few days before the divisional magistrates, fines inflicted, and orders made for the abatement of nuisances. The state, however, of the streets is disgraceful, and is calling forth the rebuke of the magistrates and the repeated complaints of the ratepayers. The corporation say they have no funds for sanitary purposes; yet they find sufficient every session for the object of promoting new Bills and schemes. An application is again about to be made to the Board of Public Works for a loan for sanitary purposes, particularly in relation to paving, scavenging, and other works urgently needed to ensure the public health. At present, in Dublin, there is scarcely an available rate but is mortgaged under the head of loans for work long since proposed to be done, the greater portion of which is still unfinished. A resolution has been passed by No. 1 committee by which the council are requested to vary their order of last year, and sanction the committee in adopting to the extent of 12,000 yards the specification of the Val-de-Travers Asphalte Company for footways, similar to that laid down near Trinity College.

A new company is floated under the title of the Irish Midland Coal Consumers' Company on a co-operative basis, and with the object of enabling members to obtain native bituminous coal at 2s. a ton above cost price. The coal-fields to be worked are in the province of Connaught, near Lough Allen.

A new and useful body has been formed for the protection of the rate-payers, and the business of their special meeting this week was to consider what steps should be taken to place before the citizens the acts of the corporation in giving legal fees to one member of their *body* and *contracts* to another.

Considerable progress is making with the work of "restoration" at Christ Church Cathedral, which will soon call for detailed description. If the long projected new street from the foot of Cork-hill to Christchurch-place were constructed by the municipal authorities, the appearance of the cathedral would be considerably enhanced, its approaches greatly improved, and the health of that district benefited. The new street cannot be much longer delayed, and its formation, it may be observed, will remove one side of the historic Castle-street, one of the oldest streets in the city, and famous in the annals of several centuries. The street was the birth-place of Dogget, the actor, and a few yards backward from the thoroughfare is not the less noted Hoey's-court, the birth-place of Dean Swift, and also the residence of many noted characters down to the close of the last century.

## THE ROMAN REMAINS AT YORK.

FOR some months past the North-Eastern Railway Company have been making extensive excavations at York, for the purpose of making a new station, and from time to time important discoveries of Roman remains have been made. Reference was made to some of these in our columns, but a Malton archæologist and antiquary has been drawn by the most recent "find" to make a thorough examination, and classify the whole. He says:—

"There are two sepulchral monuments, with inscription; two altars, with sculptures; a mutilated lion, a conical stone, and a female skull in fragments, with a gold plate inserted in the palate; and about ten sarcophagi with covers, but without any lettering; lastly, some boulder stones, embedded in the lidj clay, representing the granite formation of Shap in Westmoreland, and some other bluish stone of Plutonic origin, puzzling to geologists. The most important of all is, however, the tomb of the Roman magistrate at York, whose name is apparently Vibius, this being indistinct, but who is described most legibly as Decurio, or alderman of the municipality of Eboracum. York, therefore, was a colonia of Rome, and had its regular local magistracy, as before evidenced. The other most remarkable relic is the skull, with the thin platina of gold in the mouth. . . . The custom of the Romans to bury their dead alongside their great thoroughfares is well illustrated by this extensive cemetery, and it certainly appears that men and women of rank were interred in another side of the road leading from the camp at York to that at Aldborough. Besides the Decurio mentioned, there is an Olia Olianа lately come to light, sculptured with her husband and child, and these names represent high nobility; a Lucius Olius Olianus was Council of Rome under Domitian, and the Emperor Adrian was of the same family."

All the relics have been deposited in the York Museum, and form a valuable addition to the interesting collection of antiquities previously stored there. It is to be hoped opportunity will be, or has been, afforded for careful and thorough examination of the relative positions and surroundings of the "bluish stones of Plutonic origin, puzzling to geologists," and other boulders, or sarcen stones, which directly underlie the site of the Roman cemetery,—just apparently as an aboriginal British sacred place, or place of sepulture, might.

## ON TECHNICAL MUSEUMS.

A PAPER has been read at the Society of Arts "On Museums for Technical Instruction in the Industrial Arts and Manufactures of the United Kingdom, and the Surplus of the Inventors' Fee Fund," by Mr. Thomas Webster, M.A., F.R.S. (one of Her Majesty's Counsel). Mr. Webster, in the outset of his paper, said:—

"The communication now submitted to the Society for the Encouragement of Arts, Manufactures, and Commerce has two specific objects—the one, the establishment, maintenance, and utilisation of museums for the technical instruction of the people; the other, the application, appropriation, and utilisation of the Inventors' Fee Fund to and for such purposes.

The term *technical instruction* is adopted in preference to *technical education*, in order to express the more limited object of the present communication, as compared with others which have been heretofore discussed at, and occupied the attention of, meetings in this room and elsewhere, and for several reasons. First, instruction is only part of education; it is, in the arts and manufactures, for a special class what reading and numeration are for mankind generally. The fiat has just gone forth that no child among us shall be left without the latter; so I hope that, by the exertions of this ancient and energetic society, something may be done towards the former. There are other reasons why it is desirable that the subject should be specially limited. This society has taken steps and is pursuing active measures as to "national museums and galleries and public education," with the view of bringing under direct Parliamentary responsibility the national museums and galleries, so as to extend their benefits to local museums, and to make them bear on public education.

This great and comprehensive plan, which must commend itself to all earnest reformers of the education of the people, is worthy of the exertions of this Society, which has inaugurated and helped forward so many other noble undertakings."

After going into the subject at some length, and speaking of the Patent Office and other museums, he said:—

"In addition to the contents of the foregoing museums under the immediate control of the Commissioners of Patents, there exist in several rooms or portions of the South Kensington establishment, entirely apart from the Patent-office Museum, numerous other models of the

highest interest. Other collections also of models exist but partially utilised. No catalogues exist of these valuable collections; indeed, the ownership of many of the models and machines is doubtful, some belonging and some lent to the Commissioners, some belonging or lent to Mr. Woodcroft, and some belonging or lent to the Exhibition Commissioners.

These, if collected in one building and properly classified, would form a valuable nucleus of a National Museum of Industry, and by a proper distribution of duplicates, material assistance might be rendered to local museums.'

A discussion followed the reading of the paper.

## THE AREA ROUND ST. PAUL'S.

THE well-known cast-iron railings round St. Paul's Churchyard, having been sold by auction, are now being removed, and the aspect we showed by an engraving some short time ago will soon be attained. The railing brought 341*l.* 5s., or about 8*l.* per ton. It is of Sussex iron, about the last produced in that county. The sum named is for the ironwork only, not the stone parapet wall into which it was secured. This still remains the property of the cathedral, and consists of some fine blocks of Portland, equal in quality, or nearly so, to that of which the cathedral itself is built.

The Dean and Chapter intend to open the west area to the public next Monday (the 26th), and will make rather a high day of it, being what is termed the "Conversion of St. Paul."

The corner or memorial stone of the Carter-lane Schools, with an appropriate inscription upon it, will be laid by them in its place on the same day.

## THE SHOP-FRONT COMPETITION.

THE stipulation made by Mr. F. Sage, that all the designs submitted, whether rewarded or not, should remain his property, proved fatal to the competition, as we said it ought to prove. The competitors were only seventeen in number, and the majority of the designs sent in are worthless. We have great pleasure, however, in recording that the whole sum offered, viz., 150*l.*, was awarded. The three gentlemen who acted as judges,—Messrs. L. H. Isaacs, Shoppee, and J. Wimble,—observe in their report:—

"We deem it right to say that, owing to the conditions of the competition, we were bound to award prizes in each instance. It must not be considered, however, that the awarding a prize is to be held as an approval by us of the design; on the contrary, we are of opinion that many of the drawings do not merit the prizes they have received; but, owing to the conditions to which we have referred, there was no alternative left us. Some of the designs, however, evince careful study and practical knowledge of the subjects treated, combined with a considerable amount of artistic feeling."

The competitors to whom premiums have been awarded are the following:—Mr. J. C. Nicol (5=44*l.* 10s.); Mr. Joseph H. Blake (7*l.* 10s.); Mr. Frank W. G. Buckler (5*l.*); Mr. Jas. Young (2=15*l.*); Mr. G. P. Beater (3=13*l.* 10s.); Mr. H. Millar (2=7*l.* 10s.); Mr. M. Woolland (2=24*l.*); Mr. Jasper Wager (3=19*l.*); Mr. W. H. Arber (14*l.*).

We understand that Mr. Sage intends to repeat his offers, omitting the objectionable stipulation, and in that case may fairly expect a more satisfactory response.

## RICHMOND WATER SUPPLY.

THE inhabitants of the higher districts of Richmond have complained of the supply of water, and attention has been directed to the possibility of obtaining from another source a pure and wholesome supply

At a recent meeting of the select vestry, plans were laid before them by Messrs. Russ & Minns, according to the instructions given, and were approved, and ordered to be forwarded at the earliest possible date to the Local Government Board, in order that the amount estimated may be borrowed for carrying out the works; namely, 30,000*l.*

Messrs. Russ & Minns, in a published report, have indicated the different sources from which water may be obtained. They have selected the chalk beneath the London clay as that from which to get a water-supply for Richmond. The site chosen for the pumping-station is the old Brewery, at the end of Water-lane. The well is proposed to be 8 ft. 6 in. internal diameter for a depth of 100 ft., then decreased to 7 ft. diameter for the next 120 ft., and from this depth to the chalk (which is expected to be reached at a further depth of 56 ft.) of 5 ft. diameter. When the chalk is reached, a boring of 18 in. diameter is to be sunk in it, making a total depth of 420 ft. Powerful engines are to lift the water to high and low service reservoirs, the former in Richmond Park, and the latter near the Union Workhouse. The service is to be constant, and under sufficient pressure to command the tops of the highest houses in the district. It is estimated the water may be supplied at 6d. in the pound on the rateable value of the houses.

## M. VICTOR BALTARD, ARCHITECT.

ON the 14th inst., Paris lost M. Victor Baltard, who died in the 69th year of his age. He was a member of the French Institute, and corresponding member of the Royal Institute of British Architects. "*Prix de Rome*" in 1833, M. Baltard was for a long time architect to the Government and to the city of Paris, and in those capacities restored a large number of monuments, and built the church of St. Augustine. His chief work is the Paris "Halles," for the idea of which he was to some extent indebted to the late Hector Horeau. M. Baltard had skill with the pen as well as with the pencil, and published several works.

## REFORMATION OF LEICESTER-SQUARE.

AT last we see light: order will come out of chaos, and, in lieu of a disgrace, we may hope to find beauty. We have good authority for saying that the central area of Leicester-square has been purchased by a munificent individual, and will speedily be laid out as a garden, adorned with sculpture, and presented to the public. The scheme, as we are informed, includes four colossal busts, on pedestals, of distinguished men connected with the locality, the commissions for which have already been distributed. Thus Mr. Calder Marshall has undertaken the bust of Newton; Mr. Woolner, Johnson; Mr. Weekes, Reynolds; and Mr. Joseph Durham, Hogarth. The hoarding will come down, it is expected, in June. A pleasanter piece of news has not reached us for some time.

## STATIONS AND ROLLING-STOCK OF THE NORTH-EASTERN RAILWAY COMPANY.

IN a letter which the North of England Freighters' Association have just addressed to the President of the Board of Trade, they prefer a formidable bill of indictment against the North-Eastern Railway Company in respect of defective accommodation for both passengers and merchandise, as illustrated by inconvenient and inadequate stations, limited sidings, bad carriages, and irregularity of trains. The company's rolling-stock is totally inadequate to the requirements of the traffic, and the whole of the trade in the North of England is now, and has been for some time, subject to great inconvenience and loss from this cause. The Association add, that "there is no punctuality in the train service on any part of the system," and that through this irregularity in the running of the trains "much valuable time is wasted, and the commercial community is put to great inconvenience." Assuming these grave charges to be well founded, it would appear that there is a wide field on the North-Eastern line for the employment of large numbers of artizans connected with building and other works of a kindred nature.

## SOUNDS AT SEA.

THERE was an unusually crowded meeting at the Royal Institution last week to hear Professor Tyndall's lecture. The chair was taken by Mr. Spottiswoode, and the Bishop of Bath and Wells, Professor Huxley, Dr. Hooker, Professor Allman, &c., were among the audience. The professor commenced with the remark that the puffs from a locomotive engine can obscure the light from the noonday sun, and it is, therefore, no matter of surprise that fogs are able to obscure the less powerful lights placed round our coasts as signals to mariners. During the last ten years 273 ships have been lost around England in consequence of lighthouses being obscured by fogs, and the Trinity House has earnestly considered what substitutes for lights can be used to warn mariners of danger. In America experiments with sound signals have been made, and it has been found that for some reason or other great uncertainty exists as to the distance at which sounds can be heard on different days. The matter presenting itself to the Trinity House in this form, the Elder Brethren determined to institute a series of scientific experiments to ascertain, if possible, what is the cause of these variations. The South Foreland was selected for the experiments, which were placed entirely under Professor Tyndall's control, and were commenced in May last. Steam-whistles, air-whistles, steam-trumpets, 18-pounders, howitzers, and mortars, were the instruments used for originating sounds; and a Trinity vessel, the *Irene*, conveyed the Professor and his staff to different places in the Channel to listen for the sounds. A tabulated arrangement was given of the various distances at which the sounds were heard on different days. There were interesting and perplexing problems in the results that challenged solution. The Professor then made an allusion to his lecture delivered before the British Association on "The Scientific Use of the Imagination," and gave some few illustrations of the value of a duly controlled imagination mentally picturing the invisible. Standing on the deck of the *Irene*, he said, and listening at different times to the sounds, it was evident to all the party that there was a something which caused these variations, something which had a real existence, something invisible which it was for the imagination to picture. The Professor proceeded to speak of the passage of heat through different bodies, and mentioned the almost perfect stoppage of heat by some, and its ready transmission by others. Imagination has to picture vapour from sea and land arising in the air in layers, these layers presenting "reflecting surfaces" to the passage of sound. In the relative homogeneity of the atmosphere, or its being split up into many layers, we have a clue which may enable us to arrive at a knowledge why sounds of equal intensity will travel further on some days than others. The Professor explained some instruments called "cyrens" in use in America, and also read some extracts from Faraday's correspondence with the Trinity House on the subject of sound signals.

Although the lecture extended half an hour beyond the usual time, it was listened to throughout with marked attention.

## THE CARVING TOOLS OF NATURE.

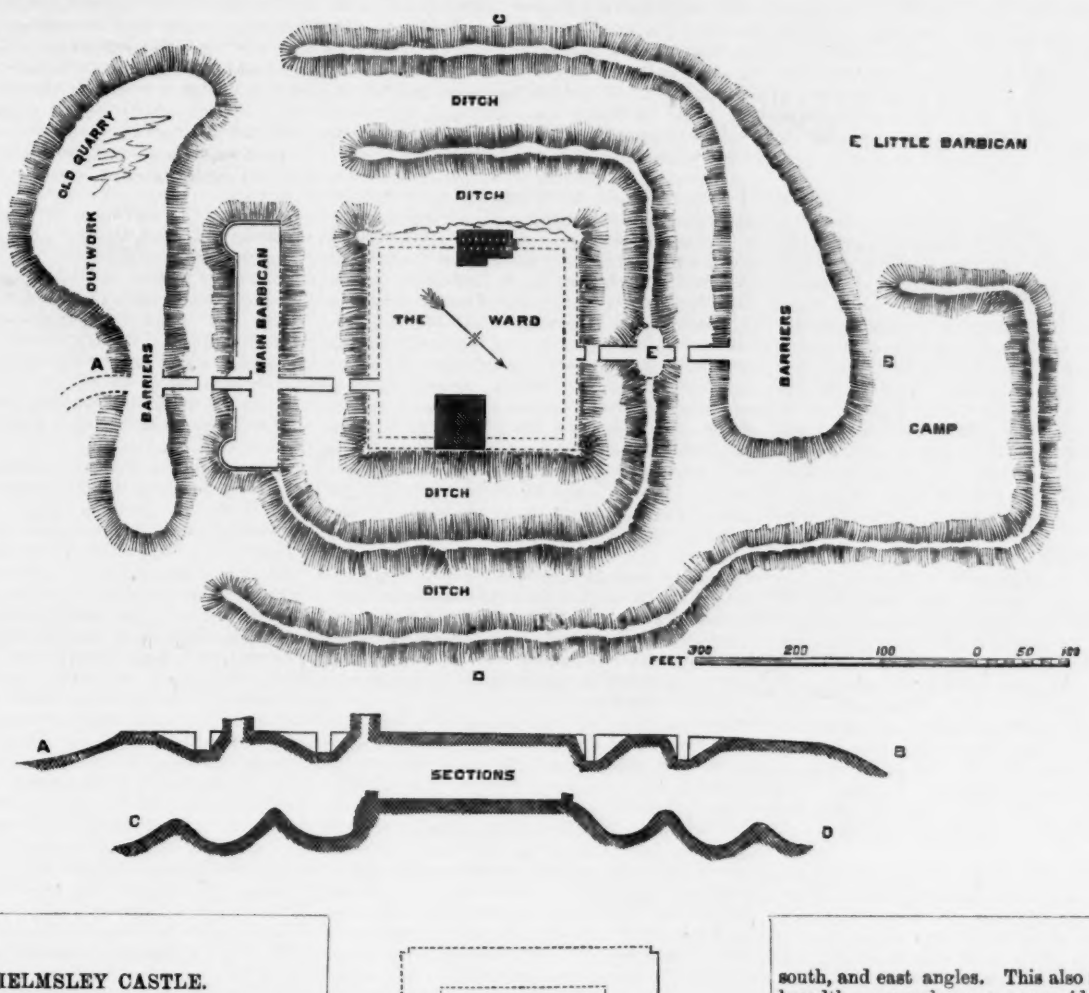
A SERIES of "Science Lectures for the People," announced by the council of the Crewe Mechanics' Institution, is being given in the hall of the Institution, by Mr. T. G. Bonny, M.A., F.G.S. (Tutor and Senior Fellow of St. John's College, Cambridge), and several other gentlemen from Cambridge who have also consented to give their services in the delivery of these lectures gratis.

Mr. Wordsell, jun., in introducing Mr. Bonny, said that they had had a variety of lectures, or rather amusing entertainments combined with instruction. These new lectures were intended to instruct and entertain, though not perhaps so much as the others.

Mr. Bonny then commenced his lecture, the subject of which (as well as of the lecture which followed) was "The Carving Tools of Nature." On the first evening he dealt with "Rain and Rivers"; on the next, with "Frost and Ice." Had it ever occurred to question themselves as to how it was that the earth had taken its present form? What had fashioned the hills and the valleys, and spread abroad the plains by the side of the rivers? That question he endeavoured to answer.

At the second lecture the chair was occupied by Captain Moorsom, and there was a very fair attendance. The *Warrington Guardian* reports the lectures at some length. It is to be hoped that the public of Crewe will appreciate these efforts which are now being made for their instruction in scientific subjects. The council make no charge for admission.

The further course is as follows:—February 5th and 12th, two lectures on "Mechanics," by Sedley Taylor, M.A., late Fellow of Trinity College, Cambridge; February 19th and 26th, two lectures on "Waves," by G. W. Hicks, B.A., scholar of St. John's College, Cambridge; March 5th and 12th, two lectures on "Light," by William Garnett, B.A., scholar of St. John's College, Cambridge. These two last will treat of spectrum analysis, and its application to the Bessemer flame. H. N. Read, B.A., of St. John's College, Cambridge, will give the two concluding lectures, on "Chemistry," on March 19 and 26. Each lecture will be illustrated by experiments.




## HELMSLEY CASTLE.

HELMSLEY, the Elmeslae of Domesday and the Hamlake of genealogists, is the name of an extensive tract of wild moorland which lies on the southern slope of the Cleveland Hills, in the north-east corner of the North Riding of Yorkshire. The hills rise to 1,400 ft. above the sea, but Helmsley Moor hardly reaches 1,100 ft., and the town of Helmsley, placed where the uplands pass into the plain, scarcely stands at 200 ft.

The real river of Helmsley, descending from the moors, is the Seph; but after its union with the Rye, the stream and the dale bear the name of the latter water, made famous by the Abbey of Rievaulx, about four miles below which, sweeping round the well-wooded promontory of Duncombe, the stream, returning somewhat upon its former course, forms the southern boundary of the castle and the town.

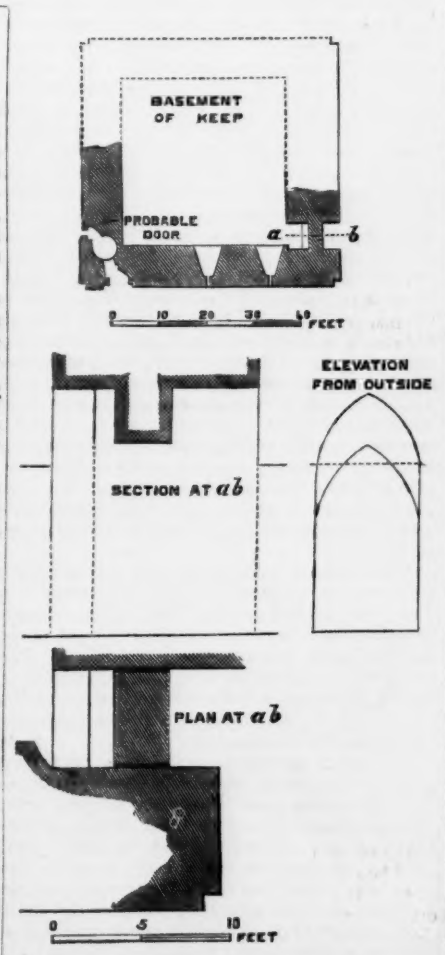
The castle is barely included in Duncombe Park, part of its eastern outwork being traversed by the border. Its position, if not specially striking, is yet strong, and favourable to the operations which rendered it in former days almost impregnable. The low platform upon which it stands is mainly of rock, and the labour employed has been rather of removing than of making ground, the ditches being wholly artificial.

Besides the Rye, which, where it flows about a furlong south of the castle, has low and swampy banks; close upon the east, between the town and the castle, descends the Etton beck on its way to the Rye, a stream the level of which allowed of its being employed to flood the ditches of the fortress.

The plan of the castle is rectangular, and its earthworks are upon a scale not usual with castles of pure Norman origin, and which, notwithstanding their form, raises a surmise that they may be of much earlier date.

The main ward of the castle is about 200 ft. square, level, and contained within a deep and broad ditch, completely surrounding it. A moderate bank of earth crowns the edge of the slope, partly no doubt original, but in part composed of the ruins of the curtain.

Beyond the ditch, and forming its counterscarp, is a ridge or bank of earth a few feet lower than the level of the ward, and therefore commanded by it. This ridge, interrupted at the southern angle, so as to communicate with the excavations beyond, is expanded upon the north-west front and again still more considerably




upon the opposite or south-east front, so as to form a lesser and a greater barbican, covering the two entrances to the place.

Again, beyond the ridge, is a second ditch, also encircling the whole place, and passing, therefore, in front of the barbicans. This, in its turn, is succeeded by a second or outer bank, also interrupted, and in three places, at the north, south, and east angles. This also is of variable breadth: somewhere, a mere ridge; in other places, as before the two fronts, expanded into broad platforms, covering the entrances and the approaches to them. Supposing these ditches to contain either water or mud, the interruption in the banks would very much increase the difficulties of those besieging the place, by breaking the communications, and preventing them from attacking the barbicans by the flanks. There are traces, outside this second bank, of a third ditch, which, however, seems to have been confined to such points as were supposed especially to need further protection.

It is evident that an earthwork such as that described, covering above ten acres of ground, and with ditches 60 ft. to 70 ft. broad, and deep in proportion, would, in resolute hands, and properly palisaded, be a most formidable stronghold. That such was the nature of the defences contemplated seems certain, since the banks would not support masonry; and although the edge of the inner ditch was of firm ground, the back or crest thrown up upon it was not, and had masonry been contemplated, would have been superfluous.

When the Norman engineer undertook to fortify the place, he seems to have confined himself to the construction of a curtain of 10 ft. thick round the inner area, placing it on the firm ground, and employing the earth-bank as a ramp against the wall; to this he added a gatehouse at each end, and a work of some strength as a barbican beyond the inner ditch; then a second gatehouse, placed upon the barbican; and finally a second or outer bridge. On the west side of the inner area, where the rock was firm, a low cliff of 20 ft. to 25 ft. was substituted for the slope of the ditch.

Besides the *enceinte* or curtain-wall, the four drawbridges, and probably four gatehouses, there seem to have been four drum-towers—one capping each angle of the place. It is true that these are no longer to be seen; but a circular heap of rubbish at each angle seems to represent such towers, which, indeed, were the usual and necessary constituents of such a work, though whether these towers were of the Norman period may be doubted: probably they were later.

In addition to these works, and reared up high above them all, was the rectangular keep, placed near the centre of the east or town side, and upon and forming a part of the *enceinte*. Opposite to the keep, and also forming a part of the *enceinte*, but on the west side, and built there-

fore upon the edge of the cliff, were the domestic buildings, some parts of which remain mixed up with later works. It may be also seen that a cross curtain between the keep and the domestic buildings divided the ward into a northern and a southern court, and it would seem that a fragment now standing, and which has much the air of having been part of a chapel, was connected, as at Knaresborough, with this wall.

The keep appears to have been a square of 53 ft., and although about 9 ft. of it are buried in earth and rubbish, it still rises to about 90 ft. Rather more than the outer or eastern half has been blown up, and has fallen into the ditch, and what remains has suffered much from alterations and additions. It is built in rubble of a very ordinary description, but with quoins and dressings of ashlar. The plinth, if one there be, is of course concealed. The walls are plain, 9 ft. thick, having neither string nor set-off, and but one low pilaster buttress, which rises to the first floor only, and is placed upon the west end of the north wall, to give strength to an interior stair. At the two remaining angles are nooks, but not intended to carry shafts or beading.

The original tower was composed of a basement and first floor, about 70 ft. high, or, as now seen, 60 ft. There remains within, against the west wall, a not very high-pitched weather-table, which shows, as at Porchester and Richmond, where the roof abutted against the wall as a gable. The wall was carried all round, high enough to conceal the roof. The west angle contains a well-staircase, which rose from the basement to the first floor. The door into the basement is buried, but the line of the steps in the wall points downwards. A breach has been effected in the west wall exposing the staircase, and seems to occupy the place of a loop.

In the west wall of the basement are two acutely-pointed recesses, terminating in square-headed loops; and in the south wall is a doorway, of 5 ft. 6 in. opening, also under an acute arch. It is possible that this basement was vaulted, though it is more probable that the covering was of timber.

The first floor was originally lighted by three windows, in Early Pointed recesses, of different sizes and heights, and above the central recess, which was placed lower, to give place for it, is a round-headed recess and window, placed in the angle of the gable. The three lower windows have been replaced by three lancets, and the recesses reduced in height and proportion to suit. The later arch is handsomely ribbed. It is uncertain how the first and main floor was covered over. In the north wall are seen the springing-stones of three ribs, evidently part of a vault; but near them is a short table, with four corbels, possibly connected in some way with the stair-entrance. Also there are fragments of two ribs in the west wall, so that the arrangements of the vaulting are obscure. The ribs mentioned are plainly chamfered, and may be Early English, or later. An addition of about 30 ft. has been made to the orignal keep, giving it an upper or second floor. In the west wall of this addition is a Pointed window in a segmental recess, resting on the old masonry. In the north wall is another Pointed window and a fireplace. There is a loop towards the south; but this part of the wall, both inside and out, is obscured by ivy. In the wall of this floor, cutting the line of the windows, is a corbel-table, the corbels cut somewhat into the shape of heater shields. This must have supported the roof, but have interfered seriously with the windows. How this story was reached does not appear; probably by a well-stair in the wall, now destroyed, a point which could, no doubt, be ascertained by uncovering the fragments in the ditch. The upper wall seems as thick as that below; and it is curious that there are no traces visible of mural galleries or chambers.

The battlements remain perfect, so far, at least, as are the walls they crown. The embrasures are of moderate size, and the merlons broad, and the running moulding is carried round the whole. At each angle is a square turret, rising about 10 ft. above the curtains. These turrets rest upon a light bracket outside, and each of the outer faces is flanked by two light, slender buttresses, in tabernacle-work, resting below upon brackets, and, no doubt, once ending above in delicate finials. In each face is a single embrasure. Of course, all these are additions.

The question of the entrance to this keep is obscure. There remain three doors, any one of which would serve. That on the ground-floor to the south; a small round-headed door at the first floor level to the north; and a third door, in the same wall, a little lower down, leading into the well-stair. There are, however, indications that none of these was the real entrance. Against the south wall are traces of attached masonry, probably of a forebuilding, containing and covering the entrance, which in that case would have been in the south wall near the east end, a part now destroyed. The staircase seems to have commenced against the south-west end of this wall, and to have passed over the present door, which probably, as at Rochester, opened into a cell below the staircase of the forebuilding. This conclusion is strengthened by the presence of seven holes in the keep-wall at the rampart level, evidently to carry a brattice commanding the staircase below. Also, high up in the same wall, there projects a mass of ashlar, which may very well have been part of a machicolation, overhanging the door at the stair-head: arrangements similar to these are not uncommon in keeps of this pattern. Of the other doors the small round-headed one may very well have opened upon the ramparts as at Clitheroe; and that which is let into the well-stair, now closed and converted into a loop, looks rather of a Decorated character, and may be an insertion, or it may have led into some annexed building now destroyed. At the period when this keep was built there was no longer that extreme caution in allowing more than one entrance to the keep.

It would seem that the original keep was Late Transition or Pointed Norman, and therefore might well have been built, as supposed, by Robert de Ros, surnamed Fursan, who held the lordship from 1184 to 1226, and probably completed the work before 1200. Then came the alteration in the first floor in a most decided Early English style, and therefore probably by Robert de Ros, Fursan's grandson, who married the heiress of Belvoir, and flourished between 1257 and 1285. Then followed the addition of the upper story, and of the battlements and turrets, all rather late Decorated. This might well be the work of William de Ros, who held Helmsley from 1317 to 1342, to whom, in 1337, was granted the tower built by Edward II. in London, near Baynard's Castle, and which seems to have stood on the bank of the Fleet-ditch, where some ancient foundations were recently laid open in the formation of the new street. This he was to hold as appendant to his Castle of Helmsley.

The domestic buildings standing opposite to the keep are composed of two blocks. One a square mass of great height, and with walls of considerable thickness, has traces of Transition Norman or Early English work, but has undergone alteration in the Decorated period, and finally in that of the sixteenth century. The other or northern building may be on early foundations, and probably is so, but its fittings are of the sixteenth century, and probably the work of the Earl of Rutland whose armorial bearings are embossed in plaster on a deep cornice and on the panelled ceiling, all now in the last stage of decay.

The northern gate-house, and any structure that may have stood upon the smaller barbican, have disappeared utterly from sight, though probably their foundations could be laid open. To the south there is more to be seen. The inner gate-house indeed is ruined, and nothing is visible above the rubbish save the outline of the western jamb, which shows a portcullis groove and rebate for folding-gates.

The outer gate-house and its barbican form a very remarkable work. This barbican is, as has been stated, an expansion of the bank which surrounds the inner ditch. It is here above 80 ft. broad, and long enough to cover completely the southern front of the place. The gate-house, like that behind it, is much nearer to the east than to the west end of the work. It is composed of two small round turrets, and two large drum-towers flanking the portal. On either side of these extend the curtains, which terminate in a pair of large drum-towers, which flank and close the outwork.

The gate-house is tolerably perfect on the ground floor. The upper story is in ruins. The portal, about 32 ft. deep, is vaulted throughout at different heights and with arches of different curves. It was defended by a portcullis and a pair of gates. The outer portal is handsome and peculiar. It is of about 10 ft. opening, and shoulder-headed, the shoulders being worked brackets. Above is a pointed arch of relief, and the tympanum between the two is composed of stones joggled together with great neatness. Above is a good flat-topped Decorated window of two lights trefoiled. Traces of the chain-holes for the bridge are seen in the spandrels of the portal. The gate-house is evidently of two periods. All behind the portcullis groove is original, either late Norman or Early English. The grove with all before it is late Decorated, probably of the age of the upper story of the keep.

Much as the buildings of this castle have suffered, it is curious that the piers, counter-piers, and bridge-pits of the four bridges should remain quite perfect, and all of excellent ashlar. The inner, or pier from which the bridge dropped, is from 9 ft. to 12 ft. long, and the pit across which it dropped of 12 ft. opening. The counter-pier, upon which the bridge dropped, is much longer, from 40 to 45 ft., and as this long and exposed causeway was but 12ft. broad, any body of enemies approaching by it would be placed at a great disadvantage.

It is difficult to form an opinion upon the age of the earthworks of this castle. Either the Romans or the Normans might have laid out an earthwork on a rectangular plan, but when either people desired to construct a place of excessive strength, they employed masonry rather than earthworks. The Saxons and Early English, on the other hand, though much given to employ defences of earth, and often upon an immense scale, are not known ever to have made them rectangular. What was the practice of the Romanised Britons, who, inheriting something of Roman arts and military rules, might also well have derived from their Celtic forefathers a taste for works in earth, is not known. Such a fortification as the present may possibly be their work. Of course, it is possible that the whole may have been the work of Robert Fursan, especially as, remarkable as it is, it is not named in Domesday nor any early record.

Helmsley appears, as has been stated, in Domesday as "Elmeslae, in the wapentake of Langeberg." It is now in that of Ryedale; but that this is the place meant seems certain, from its entry in company with Sprostune, now Sproxton, one of its townships, and Harun, now Harome, a chapelry in the parish. The entries, however, are of a very ordinary description. The tenants are—"In Sprostune Turloge Normand et Sortcolf; in Elmeslae, tres Taini; in Harum Sortcol." When these holders were swept away, and who succeeded to them, is not known; but, according to Dugdale, Helmsley was held in the reign of Henry I. by Walter L'Espec, a very famous baron. He appears as connected with Yorkshire, Bedfordshire, and Carlisle, in the Pipe-roll of 31 Hen. I., 1130-1; and having lost his only son by a fall from his horse, he founded the abbeys of Kirkham and Rievaulx in Yorkshire, and Wardon in Bedfordshire. L'Espec was a Norman, and held estates in Normandy, but when or how he came over is not recorded. A certain William Spech is recorded in Domesday as a great tenant in Bedfordshire, and he may be the father of Walter, who had lands there. He died in 1153, and in 1157-8 Wr. de Bussei is found moving against Robert de Ros for the partition of this estate. Who this Robert de Ros was is uncertain. Adelina, Walter's daughter and co-heir, married Peter de Ros, who in her right was of Helmsley, or, as it was always called, Hamlake.

Peter de Ros, whose name was derived from his lordship of Ros, in Holderness, was, by Adelina, father of Everard de Ros, who appears in the Liber Niger as the tenant *in capite* of several Yorkshire fees, which no doubt included Helmsley, as many of the tenants' names are local, as Hairun, Spouston, and Stainesgrave. Everard, being under age, was then in the wardship of Ranulph de Glanvill. He died before 1186, and was succeeded by his son Robert, third Lord of Hamlake, surnamed Fursan, one of the Magna Charta barons, and the reputed builder of Helmsley Castle. He died as a Templar, and his effigy is still pointed out in their church in London.

Robert de Ros, his grandson, who probably executed the earliest additions to the work of his grandfather, married Isabel d'Albini, heiress of Belvoir.

From them came William de Ros, seventh lord of Hamlake, who died 1342-3, and probably completed the keep and the outer gatehouse and barbican at Helmsley. With his descendant, Edmund, fifteenth lord, the male line failed, and Helmsley passed with his sister and co-heiress Eleanor, to Sir Robert Manners, or rather to their son, George Manners.

His descendant, Francis Manners, sixth Earl of Rutland, became Lord Ros of Hamlake by patent, which, however, died with him, as he left a daughter only, Katherine, who married George Villiers Duke of Buckingham, whose son dissipated the estate, which, at his death, was sold to the ancestor of the present owner. The barony of Ros, or Roos, of Hamlake, was called out of abeyance, but exists quite separated from the castle or estate. G. T. C.

## THE POSITION OF THE ARCHITECT.

THE architect stands in a different position from that occupied by the painter or sculptor.

The painter has his models to choose from in the inexhaustible storehouse of nature; he sees the ever-changing clouds as they career across the cerulean, casting shadows on the slopes of the purple hills; he stores up in his mind's eye the effect caused by a momentary gleam of light upon the overhanging foliage of the wood,—wild flowers, of varied hue and form, grow in marvellous luxuriance at his feet; the birds of the air, the beasts of the field, display their habits of life before him; and man—his fellow man—is ever crossing his path, a being whose every action is replete with interest, whose countenance is the index of a mind teeming with ever-changing and subtle thoughts.

These forms of beauty are provided for the painter by nature, and these he selects, arranges, and depicts in glowing colours for the admiration of his fellows. His art is one which all men can, in a greater or lesser degree, appreciate and sympathise with; for it deals with the multiform character and action of life,—its subjects are inexhaustible, ever varied, ever new.

Less popular and more arbitrary is the work of the sculptor. He has principally to deal with form, to perpetuate in enduring material the fleeting beauty of grace or power of which he catches glimpses in animated nature. The superb contour of the human form—the masterpiece of Nature—is displayed before him. The untrammelled freedom of action of the lower animals, and the loveliness of the vegetable kingdom, limn themselves upon the retina of his eyes, and from these he selects and combines the several qualities fitted for the display of his art.

The architect is not favoured with direct tuition from nature, like the painter and the sculptor. No work of nature is a model for him. The form of his works must be the creation of his own mind governed by necessity.

The effects which constitute the elements of the grand, the graceful, and the picturesque;—the effects produced by contrast and gradation, light, and shade, simplicity, complexity, and variety;—the practicability of uniting beauty of form with strength of structure, utility and fitness with gracefulness and durability: all these he may learn from Nature, but she provides him with no models. When he does cull from nature it is but a morsel of detail wherewith to adorn his structure, and that he treats not in a naturalistic, but in a conventional manner. It thus appears that at the outset the architect has greater difficulties to contend with than the painter or the sculptor, but there are yet greater awaiting him. Their works are complete as they issue from their own hands; he must give over the execution of his design to others; they are not embarrassed by the element of utility as he is; little or no scientific knowledge is necessary for the successful prosecution of their profession,—such knowledge to him is an absolute necessity.

There are two qualities, then, which the architect must possess,—qualities not often found equally combined in one individual. He who possesses a thorough knowledge of the theory of the art, who is inspired with the noblest ideas and most poetical conceptions, may be deficient in the practical knowledge requisite to enable him to carry these ideas into execution. He who has a wide practical knowledge may be very deficient in refinement of taste and ideality; he may do all that is necessary in a utilitarian sense; his work may be a masterpiece as regards construction and arrangement, and may not be a truly architectural production after all. The ideal and the real seem to have an antipathy towards each other, and friendly intercourse between them is rare; entire concord never.

Architecture as now practised by us has been developed through successive ages; it is compounded of Greek, Roman, Gothic, Italian, and French elements. From the same sources we derive the language now spoken by us. The contracted and simple speech of our Saxon ancestors has been enriched by the fusion of these tongues, and we now employ a form of speech by which we can give expression to the most complex phases of thought. What the language has lost in simplicity it has gained in breadth and variety,—its mixed character is a necessary result of the advance of knowledge and intellectual culture, the accumulation in the storehouse of the nation of the fruits gathered by her sons.

The freer intercourse with foreign countries and the researches of archæologists have placed at the disposal of the architect the accumulated results attained in the art over the civilised world. These he interprets and adapts to his purposes so as to meet the complex requirements of the age. He uses these materials as the language in which to express his ideas, and if he is a man of talent he will produce a work of art as truly original, as much his own, as he who produces a volume of history, a poem, or a work of fiction.

It is asserted that in England there is no school of art, but only scattered items of personality without unity without a common standard. How far is this an evil? In the one case we have a body of artists governed by certain rules, and there is consequently a comparative unity in their mode of working, a means whereby the efforts of individuals are conserved and not expended in efforts towards an indefinite end. On the other hand a school of art is apt to degenerate into pedantry and become a mere disciplined body of men obeying a supreme command.

The tendency of the age is to break down the barriers that have hitherto separated the states of civilised Europe. The railway and the telegraph are proving to be greater levellers of distinctions than even the printing-press,—the struggle for ascendancy amongst the nations may in the future be one for intellectual ascendancy: and as in individuals, so in nations, the leader will be followed until he is superseded by another. So that even there will be a perpetual shifting and changing, at longer or shorter intervals.

This tendency to follow a leader is already apparent in places where it was least likely to be expected. In remote Japan, a country which, within the memory of the present generation, was closed to the footsteps of Europeans, we find the fashions of Europe being rapidly adopted. In Turkey, Egypt, India, and the ancient world generally, European influence is pushing its way, and it will ultimately penetrate into the most remote regions, and in course of time even the barbarians of Central Africa will be subjected to the dominant influence. Local peculiarities there ever must be; the climate and the material at command will necessitate particular treatment, but the marked distinctions which now obtain will surely be softened down. There is, therefore, the greater necessity for singleness of aim, for unity in the methods of instruction, so that we may run the race without confusion towards a distinctly understood goal.

As the matter at present stands, the architect is burdened with an *embarras de richesses*. There is a constant demand for something new and striking, and he is accused of want of originality, because he cannot invent a new style. Architecture, as a fine art never has been, and never will be, advanced by such means; it will not flourish in the forcing-house; it is a plant of slow growth requiring many years before it throws out new branches. If cut down it springs again from the original root, and the reticulation of the branches is as before. If the seed is diligently sown, and carefully cultivated, a new variety may be produced, but still its affinity to the parent plant will be obvious.

## A NEW RAILWAY FROM NORTH-EAST LANCASHIRE TO SCOTLAND.

THE first sod of a new railway which will materially shorten the distance between Blackburn and the neighbouring towns in North-East Lancashire, and the extreme north of England and Scotland, has been turned, amidst much ceremony and rejoicing, by Lord Ribblesdale. The new line is a continuation of the Blackburn and Chatburn railway, commencing by a junction at Chatburn, and terminating at Hellifield, in the West Riding of Yorkshire, by a junction with the Midland Company's new line between Settle and Carlisle, now in progress. Although it is only eleven miles and a half in length, it will effect a saving of upwards of twenty miles between Blackburn and North-East Lancashire and Scotland, by avoiding the present route *viâ* Preston and Lancashire.

The works will comprise several heavy cuttings and embankments; but although the line passes through a mountainous country, the engineers have managed to avoid tunnels. One of the heaviest portions of the work consists of a viaduct over Stook Beck, not far from the town of Gisburn, where the railway will pass through a most romantic glen about a mile in length, at a height of more than 100 ft. above the river which flows beneath. The line will not only open up one of the most picturesque portions of Lancashire and Yorkshire, but will offer facilities to the North, which has hitherto been unknown to the central Lancashire towns. The increasing traffic between North-East Lancashire and the North of England and Scotland has induced the Lancashire and Yorkshire to enter upon the undertaking, and the line is to be pushed forward with vigour. The company also intend to erect extensive station accommodation at Chatburn and Gisburne, along the line, together with spacious locomotive works at the latter place, and for this purpose they have purchased fifteen acres of land at Chatburn, and twenty acres at Gisburne.

## LAMBETH NEW WORKHOUSE.

THIS workhouse, which was recently opened for the reception of inmates, is situated on a piece of ground at the rear of Kennington-lane, with an approach also from Kennington-road. The several buildings and yards occupy between seven and eight acres of land.

There are three main divisions, viz., the "house" proper, or "indoor" department; the outdoor-relief department; and the official building, in which the parochial poor-law business is transacted.

The "house," which is designed for 820 inmates, is arranged on the pavilion system, the administrative block dividing the sexes. There are two blocks for able-bodied and two for aged and infirm, all connected with the central block by a general corridor, 9 ft. wide, lighted on both sides, and having an open corridor above serving as a means of communication for the first floor.

A system of rigid classification has been carried out in this design, and this separation of the several classes has been carried down to all minor offices. Each class has its own and distinct day-rooms, dormitories, staircases, lavatories, waterclosets, airing-grounds, and work-rooms; the only common-place of meeting being the chapel and dining-room, where conversational intercourse is forbidden. The several classes in each sex are for aged, able-bodied of good character, and two subdivisions of able-bodied of bad character, together with accommodation for a limited number of boys and girls.

There is a dining-hall for each sex leading direct from the kitchen, and a large chapel with open-timbered roof.

In the rear of the main blocks are the laundry, engine and boiler house, well, bakehouse, corn-mill, and general workshops, the machinery in which is worked by a 30-horse power engine, supplied by T. Robinson & Co., of Rochdale.

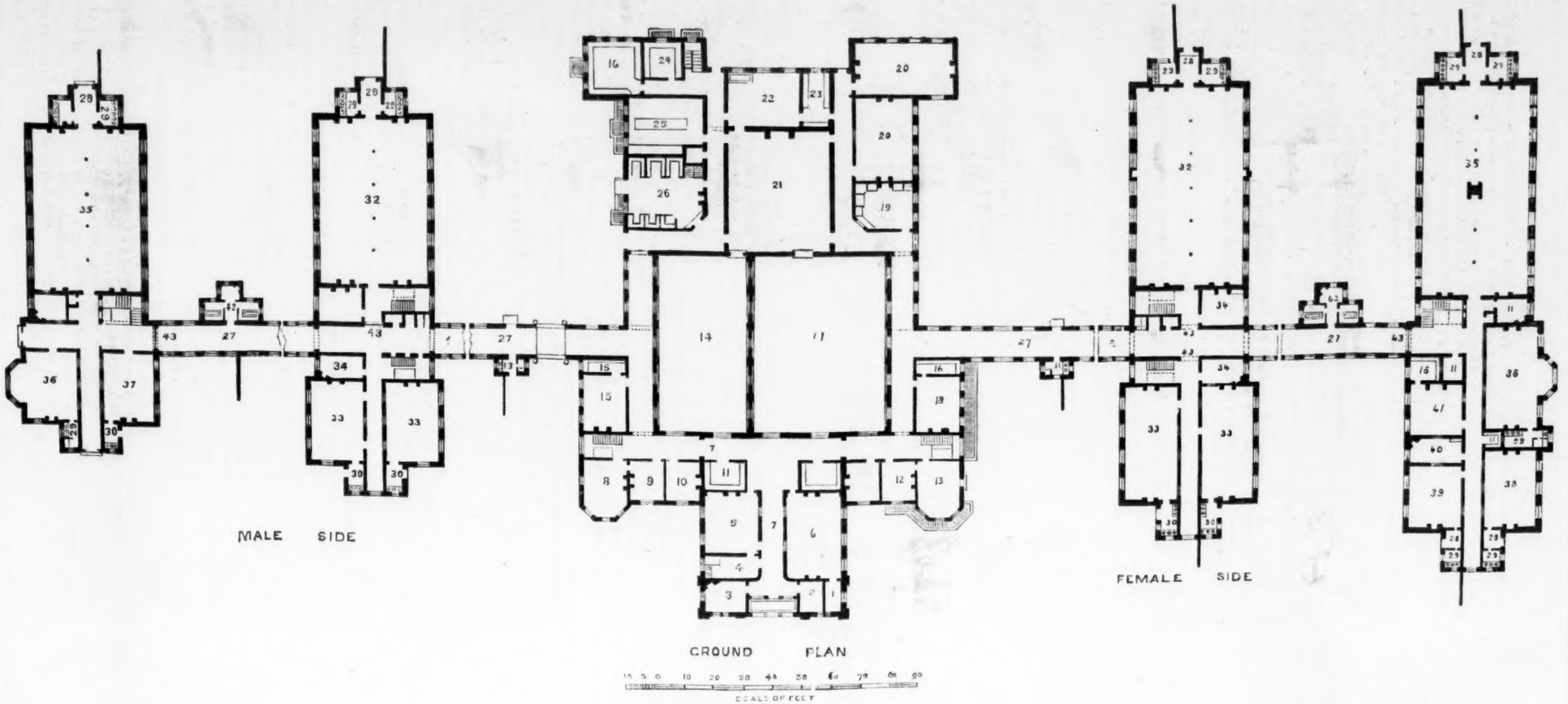
The out-door poor department is arranged for 400 men and 200 women, and comprises large stone-yard, with 150 stalls, oakum and wood picking sheds and yards, and hand corn-mills.

The official block comprises a large waiting-hall for out-door poor, and the Board-room and relief-offices.

The dining-halls and chapels are warmed by Bacon's high-pressure warming apparatus. All other rooms are warmed by open fireplaces.

The ventilation is provided for by perforated zinc panels in the ceiling, connected with vertical flues in the wall, a star gas-burner and iron hood being placed in each panel, to cause an upward current of the vitiated air. Cold fresh air is introduced into the rooms by means of openings in the outer wall, and galvanised hit-and-miss gratings in the floor.

The cost of the "house" proper was 46,000*l.*; that of the official and out-door department, 7,500*l.*; of the engineering works, 7,250*l.*; and of the fittings, 3,500*l.* The architects were Messrs. R. Parris and T. W. Aldwinckle, whose designs were selected in a limited competition. The builder was Mr. W. Crockett.




LAMBETH NEW WORKHOUSE, KENNINGTON LANE.—*Plan of Ground Floor.*

REFERENCES TO PLAN.

1. Entrance for friends of paupers.
2. Porter.
3. Day-room for four youths.
4. Retiring-room.
5. House committee-room.
6. Visiting-rooms.
7. Official corridor.
8. Master's office.
9. Master's private office.
10. Storeroom.
11. Store.
12. Master's parlour.
13. Master's dining-room
14. Men's dining-room.
15. Male officers' mess-room.
16. Larder.
17. Women's dining-room.
18. Female officers' mess-room.
19. Matron's office.
20. Sewing-room.
21. Kitchen.
22. Scullery.
23. Grocery store.
24. Cook's store.
25. Bread-cutting-room.
26. General store.
27. Corridor.
28. Lobby.
29. Lavatory.
30. Lobby and lavatory.
31. Officers' lavatory.
32. Day-room for able-bodied (good).
33. Day-room for able-bodied (bad).
34. Attendants' sitting-room.
35. Day-room for aged.
36. Dormitory for aged.
37. Day-room for boys.
38. Day-room for girls.
39. Day-room for girls training.
40. Training Mistresses' parlour.
41. Training kitchen.
42. Bath and dressing-room.
43. Gate.

LAMBETH NEW WORKHOUSE: CENTRAL PORTION.—MESSRS. PARRIS & ALDWINCKLE, ARCHITECTS.

## A CANOPY.

SIR,—Permit me to point out that Dr. Tristram (*Builder*, p. 15) entirely misconceived the meaning of a *canopy* in the raid of 1556. It was a cloth of lawn or net weighted at the corners with metal balls, and hung over a pendent pyx. The practice of reservation having ceased in the Reformed Church of England, the pix and its veil or canopy became illegal and were removed. So Harding says, "Deny the reservation and keeping of the Blessed Sacrament, for which *the pix and canopy* served in the churches of England" (Jewel's Works, ii., 553). It was purely an English custom and mode.

With this "little canopy, a thing of small price," he contrasts the "gorgeous testure or canopy of gilted boards" over a bishop's chair (p. 557), and the dean's "canopy of tapestry silk and arras," which was also a tester.

The only purely structural ciborium in England was over the altar of Henry VII. in Westminster Abbey, and lasted there till its destruction in the Great Rebellion. It had a roof and four pillars of marble. It never was called a canopy, a name only employed for (1) the pyx cloth or (2) a tester. MACKENZIE E. C. WALCOTT.

## THE "CRITERION" AND THE BOARD OF WORKS.

AT last week's meeting of the Metropolitan Board of Works, the district surveyor and the architects of Messrs. Spiers & Pond were heard with reference to the "Criterion." The district surveyor said the building complied in all respects with the Act as a building, and the province of the Board was to consider "as an act of courtesy between one public department and another, to use the words of the chairman of this Board," whether the requirements of the Lord Chamberlain had been complied with, and the tavern and proposed theatre were really separate buildings, he proposing to grant or withhold his licence upon their report.

The architect of the Board who had surveyed the building suggested certain modifications in the existing plans, and the proprietors were heard by counsel upon these.

Mr. Selway admitted that the "Criterion" was a handsome building. He hoped, however, that he would not see many more structures with a ball-room at the top, dining-rooms in the middle, and a theatre at the basement, which had to depend upon the air that was pumped into it by machinery.

After a long discussion,

Mr. Roche moved, "That the Board do proceed to make an order in pursuance of the superintending architect's report made on the 7th inst."

Mr. Newton seconded the motion.

Mr. Richardson proposed as an amendment, "That inasmuch as the building has been constructed in strict accordance with the Building Act, and to the satisfaction of the surveyor, the Board take no further action in the matter."

The Chairman then put the amendment: seven voted for it and seven against.

The amendment was next put as a substantive motion, and carried. The responsibility of granting a licence to the "Criterion" was thus left with the Lord Chamberlain.

## DESCRIPTIVE GEOMETRY.

A LETTER from the country, signed "a Striver under Difficulties," asks for the name of a book on geometry adapted to serve as a text-book for advanced students of the mechanical and applied sciences. We depart from our usual rule, and suggest for our correspondent's purpose "Descriptive Geometry," by W. Timbrell Pierce, architect (Longmans, 1873), to which we have already briefly alluded. The book best to compare with it in English is "Bradley's Practical Geometry," and as the author states in his preface there was ample room for an advanced text-book. We are just beginning to perceive the utility of giving a sound education to our artizans and working men, and as a knowledge of practical geometry is the best starting-point for a system of scientific tuition, the value and need of a book like the present is apparent. Our Continental neighbours have for a long time made descriptive geometry a special study in their colleges and schools, and with marked success, and the author acknowledges that his own work is founded in a great measure upon the similar work by Professor Leroy published in France. Mr. Pierce's treatment of the second part on perspective is different from that generally adopted; and the *reasons* of the difficult constructions "in plano" are very concisely stated. From the nature of the book, perspective is treated as a mathematical radial projection. We may add that the book is of convenient size, and includes eighty-five plates.

## OPENING OF TWO NEW BOARD SCHOOLS IN LEEDS.

DURING last year, Bewerley-street School, the first built by the Leeds School Board, was publicly opened, and the same ceremony has now taken place in connexion with two other schools also erected under the auspices of the same body. The schools now opened are situated, one on Primrose-hill, Green-road, and the other in South Accommodation-road, Hunslet.

The foundation-stone of the Primrose-hill School, for 676 children, according to a statement made by the chairman, was laid on the 13th November, 1872, by Mr. John Jowett, vice-chairman of the Board. The school comprises separate departments for boys, girls, and infants. The boys' and girls' schools are identical in size, each making provision for 228 children. The principal schoolrooms are 46 ft. by 30 ft., and three class-rooms are attached to each department. The infant school will accommodate 220 children (making a total provision in the three departments of 676), and it also comprises principal schoolroom and three class-rooms. Covered and open playgrounds are provided. The site, containing 3,915 square yards, cost 1,420*l*. Builders' contracts and other expenses amount to 6,380*l*. The architects are Messrs. W. Perkin & Sons. The provisional school in Beckett-street, which has been attended by 369 children on the roll, will now be transferred to the new school. The schools are situated in the North Registration District, the total population of which district in April, 1871 (census), was 49,624. The total number of children over three and under thirteen years of age is 11,873. The Board considered that elementary school provision should be made for four-fifths of 11,783, or for 9,498 children.

The building is two stories in height. On the lower floor are the infants' entrance and lavatory; schoolroom, 41 ft. 6 in. by 30 ft.; infants' class-room, and two class-rooms capable of being thrown into one; boys' and girls' entrances and staircases to the upper floors; and covered playgrounds under the boys' and girls' class-rooms. On the upper floor are boys' and girls' schools, each 41 ft. 6 in. by 30 ft., and three class-rooms to each department, with lavatories and cloak-rooms. The style is Domestic Gothic. The materials are brick, with stone dressings; the doorways have pointed heads and tympanums, with traceried heads and mullions; the windows are of three and two lights, with stone sills, mullions, transoms, and circular heads, recessed with inner brick and stone voussoirs and label moulds. Those in the gables have pointed heads, and are filled with plate tracery. The covered playgrounds have arches, with stone and brick voussoirs and moulded labels. The playgrounds are spacious, and are enclosed with walls and palisades.

The South Accommodation-road School was opened by Mr. Jabez Woolley, chairman of the Sites and Buildings Committee of the late Board.

Towards meeting deficiencies in school accommodation, the Board have provided the Bewerley-street School, with accommodation for 854 children, and the school under notice, which accommodates 660 children. In addition to the Jack-lane School, for 679, which is in course of erection, schools at Hunslet Carr, at Low-road, Hunslet, and in Princes-field, are also included in the Government requisition. The provisional Board schools in Hunslet are already attended by 1,834. In the Bewerley-street School, in addition, there are 826.

The foundation-stone of the school was laid on the 13th of November, 1872, by Sir Andrew Fairbairn, chairman of the Board. The school comprises separate departments for boys, girls, and infants, the boys' and girls' making provision for 235 and 237 children respectively. The principal schoolrooms are each 46 ft. by 30 ft., and three classrooms are attached to each department. The infant school will accommodate 193 children, making a total provision of 660. It also comprises principal schoolroom and three classrooms. Covered and open playgrounds are also provided. The site, containing 4,115 square yards, cost 2,583*l*. The builders' contracts and other expenses amount to 4,801*l*. The schools, which have been erected from the designs of Mr. E. Backhouse, Leeds, will accommodate 236 boys, 230 girls, and 194 infants. There are for each department a general schoolroom, three classrooms of various sizes, a covered playshed, retiring conveniences, and large and airy playgrounds, the whole being surrounded on three fronts by an iron boundary railing. The main schoolrooms are arranged in three wings, the centre of which, being considerably recessed from the other two, forms the infants' school, 50 ft. by 24 ft.; on the one side of which, and parallel to it, is the boys' school, 46 ft. by 30 ft.; and on the other side the girls' school, also 46 ft. by 30 ft.; while the subordinate class-rooms belonging to each department are grouped between and in the rear of them. The outline is thus considerably broken. The lightning and ventilation of the several rooms are considered good. Each department is provided with a separate entrance porch and lavatory. The buildings are erected of brick, with stone dressings, and are of a plain character, in the Byzantine style of architecture. The windows are all round-headed, with shafts and moulded arches. There is no carving in any part of the building.

## LONDON AND ITS FOGS.

SIR,—As your interesting article of the 27th ult. will doubtless direct much attention to this subject, I beg to submit the following to your readers, in answer to the inquiry, "What is the cause of these dense Fogs?"

In various papers read at the meeting of the British Association in Glasgow (1840), at Oxford (1847), and otherwise published, I have endeavoured to explain the cause of rain and allied phenomena on the following theory, and I hope to show that the cause of the dense London fogs is explicable in accordance with it. The theory is,—that, as electricity has no weight, occupies space, and coats the surface of all bodies, and as the surfaces of bodies increase in *proportion* to their bulk as the bulk diminishes,—although water is 860 times heavier than air under the ordinary pressure of the atmosphere, the particles being so minute, when distinctly detached, and completely enveloped in their normal coating of electricity, are rendered by it almost buoyant in the air at any low temperature; but with an increase of temperature, their capacity for electricity being increased, they are buoyed up into the air by this increase of their electric charge; then if condensed near the earth's surface (*i.e.*, cooled, and their capacity for electricity diminished), the extra charge of electricity is withdrawn, and the particles sink, or are attracted to the condensing body as dew; but if they rise out of the electric attraction of the earth, and are then condensed, the electricity, being insulated, forms an atmosphere around each particle, which surcharge of electricity not only suspends the vapour by its lightness, but also repels the neighbouring particles, and prevents the formation of rain; but on the escape of this surcharge from the particles of vapour, either from passing over high hills, from the air becoming damp and in a conducting condition, or from any other cause, then the particles lose their buoyancy, and fall as rain.

With respect to fogs, I totally disagree with the idea that they are "formed by the mingling together of masses of air at different temperatures," or that they are "occasioned by a descending current of air." From my own observation I am of opinion that dense fogs seldom or never occur except with a cloudless sky, and in calm, or nearly calm weather, and I believe they are generally caused by a free radiation of heat from the atmosphere when highly charged with vapour at a low level, which vapour, from the conducting condition of the air, loses its electricity as it cools down, and, gradually sinking, becomes visible, not from any change in its condition except the approximation of the particles of which the fog is formed. It is usual to attribute the visibility of vapour to condensation or cooling, but steam from a railway train becomes invisible on diffusion, although it must then be fully condensed.

In producing the dense fog of London other causes come into operation. At such times, from the vast population, the thousands of fires, and from the continuous traffic, the streets and London generally, must be warmer than the air

above, and the vapour resulting from this being unable to rise, increases the density of the fog; or if it could rise into the clear above the fog, it would be cooled down by the radiation of its heat, and losing its electricity would sink again into the mass of vapour below. But doubtless the principal cause of the darkness of the London fogs is the quantity of smoke mingled with the vapour of the fog; and I believe the conducting condition of the atmosphere, which causes the vapour to sink, is also a principal cause of the descent of the smoke. Steam is electrical, and in a dry and non-conducting condition of the air may be seen to ascend from the rail-trains to a very considerable height; but in a damp and conducting atmosphere the steam does not rise, and at times sinks at once to the earth.

The rising or sinking of smoke in the air seems also to depend on the conducting condition of the atmosphere, and is, I believe, an electric phenomenon. Smoke (*i.e.*, carbon) is heavier than the air, and, although it might be blown out from a chimney with force, it could not rise higher than that force would send it without some buoyant agent. I believe the ascent of smoke in the air is strictly analogous to that of vapour, and that the particles take up electricity according to their temperature, which is retained during a dry state of the air, or dissipated, and the atoms fall on the air becoming damp.

I fear I am trespassing too far on your patience with this long letter, but I have been anxious to meet all the points alluded to in your paper. This, I believe, I have done, as on this theory it may be seen why "the deepest darkness hangs over the most crowded neighbourhoods"; why London should be comparatively free from fog during very early hours; and why over the cold clay soils the fog should be dense. As for the descent of fog in chimneys, I think, it may be accounted for from the tendency to diffusion in all bodies equally charged with electricity.

G. A. ROWELL.

*Oxford.*

*** From a medical point of view, it would be interesting to ascertain the proportion of pure air procurable from a certain quantity of the atmosphere during a dense fog, as compared with that from an equal quantity of air in its ordinary condition at the same temperature, and under the like atmospheric pressure; as, in addition to the impurities (smoke, &c.) of the air during dense town fogs, the impurities inhaled must be in an inverse ratio to that proportion.

## RE-OPENING OF CO-OPERATIVE HALL, BURY.

THIS hall, which has been closed for a considerable period for the purpose of undergoing alterations, has been re-opened. The work has been done in accordance with designs prepared by Messrs. Maxwell & Tuke, architects, Bury. The interior has undergone a transformation. The hall, as originally constructed, was defective in many respects, but chiefly in its acoustic properties. The platform has been transferred from the position it formerly occupied to the Knowsley-street end of the hall, and the space leading to the entrance of the room has been utilised for ante-rooms, of which there are four in connexion with the platform, fitted up with lavatories, &c. The platform is a spacious one. Formerly one side of the hall only was galleried, which gave the room a disproportionate appearance; but this has now been remedied by carrying a gallery completely round the building, the ornamentation of its front being in harmony with the platform.

The gallery front is framed with curved and enriched cast-iron standards from the designs of the architects. These, as well as the gallery pillars, have been provided by Mr. McFarlane, of Glasgow. Between these standards the space is filled in with boarding covered with plaster moulds and panels, the whole being surmounted with a polished baywood capping. No alteration has been made in the main ceiling except that necessitated by the ceiling to the platform, and two centre flowers round the additional sunlights. The platform has been placed in a recess formed on the Knowsley-street side of the hall, between the main stairs and the new retiring-rooms. The front is encased with framing with a bold cornice, and footlights are provided for theatrical representations. The tinting of the walls and ceiling is merely a temporary substitute for the more thorough decoration which they are intended hereafter to receive.

The access to the hall and egress from it by means of the present staircase appear to be inadequate and disproportioned when compared with the accommodation supplied by the addition of the gallery; and the committee of the stores, whilst having every facility for securing another entrance, run a great risk in contenting themselves with one entrance to a hall of such dimensions, and at such a height. Any alarm which caused a panic must, under present arrangements, result in a fearful catastrophe, as the architects themselves have declared. It is intended, however, at some time, to erect a spacious staircase leading up to the principal floor and gallery, to increase the convenience and safety of visitors, but nothing definite is decided upon. Mr. John Smith, joiner and builder, Bury, has had the principal contract for the work; the plastering has been done by Mr. Jacob Lomax, and the plumbing by Mr. R. Caton.

## PROPOSED DRAINAGE OF BASINGSTOKE.

THE Town Council have been discussing the drainage question, and conferring with Mr. Charles Jones, C.E., of Ealing.

Mr. Jones read a report on the proposed drainage of the town, in the course of which he said that he found that the town was what was called a cesspool town, and only a few of the houses drained directly into the sewers. He had ascertained that the present drains were 2 ft. or 3 ft. below the surface, and the sewage was discharged by four outlets. The whole of these sewers could without difficulty be brought into one main sewer, concentrated at a point near the gasworks, and carried along the main road to a point below the Basingstoke Mills. This was Scheme No. 1. The other scheme, which he would call No. 2, would be far more expensive, and also far more efficient. He invited their most serious attention to this, because this scheme was complete, although it would cost some 1,800*l.* more than Scheme No. 1. If the old drains were used, the outlets must be considerably enlarged, but it was far better to incur a somewhat larger outlay in the first instance, and adopt a complete system. The scheme No. 2 was precisely similar to the one he was completing at Ealing. The total cost of the Scheme No. 1 would be about 3,578*l.* 9*s.*, and total cost of the Scheme No. 2 about 5,335*l.* 7*s.* The annual cost of the smaller system (No. 1) would probably be as much again as the cost of the larger one. He proposed to purify the sewage by the lime process, which is very simple. It was the first process brought out, and he believed it to be the best. They were not proposing to go into the question of irrigation farming, but will have a small quantity of land to utilise and further purify the sewage. For system No. 1 they would require two men at the works, at say 1*l.* each per week; say four yards of lime per week, which would cost about 52*s.* per week; extra for gravel, &c., say 20*l.* The total annual cost of working Scheme No. 1 would be about 250*l.* In Scheme No. 2 one man only would be required, and only one-half of the quantity of lime. The total annual cost of this scheme would be about 135*l.*

## "CREEPING RAILS."

SIR,—Having read several letters which have lately appeared in your valuable publication under the above heading, my interest as a traveller has been excited. It is supposed to be caused by the earth's motion. It is not stated whether the influence is magnetic or atmospheric: if the latter, the same cause would operate to give to every plant that grows a westward incline; and, if magnetic, the currents being most powerful in a line with the poles, and consequently in a line with rails north and south, one rail could not be affected more than the other.

Another solution must be sought: the prevailing winds in this island range between E.S.E. and W.S.W. Taking the average force of such winds to be one-pound per foot, and average trains to be 200 ft. long and 10 ft. high, a force of 2,000 pounds is operating on every train in motion up or down; the flanges of the eastward wheels driving on the eastward rails, and the flanges of the westward wheels receding from the westward rail in the same degree.

Taking also into account that these winds are accompanied by more or less rain, softening the soil in which the sleepers' lie, it may be found that the same cause operates to produce *creeping sleepers* as well as creeping rails.

Interested as a traveller, I may, perhaps, be excused for interference as a non-professional.

AN ADMIRER OF THE "BUILDER."

## PROPOSED RAILWAY BRIDGE OVER THE RIVER DEE.

AN important Board of Trade inquiry was held on Friday and Saturday last at the Town-hall, Chester, in reference to the height of a bridge proposed to be erected by the North Wales, Chester, and Birkenhead Railway Company, over the River Dee, near Connah's Quay, the main question involved being whether the bridge, if erected at the limited elevation proposed by the railway company, would not seriously interfere with the navigation of the river. The circumstances under which the inquiry was held were as follow:—During the last session of Parliament the railway company obtained an Act for constructing a railway between the points named, the undertaking including a bridge over the Dee at Connah's Quay, as already stated. The promoters, when the Bill was before Parliament, proposed 78 ft. as the height of the bridge, contending that that elevation was sufficient to admit of all vessels frequenting the Dee passing under it, with few exceptions, and that these last-named vessels would also be able to clear the bridge by striking their topmasts, which could be effected in a short time. The House of Lords, however, in passing the Bill, named 110 ft. as the height of the bridge, but left it to the Board of Trade to make any reduction in the height which they might think desirable, after an inquiry into the subject, and in accordance with this Parliamentary decision the Board of Trade directed Colonel Hutchinson, R.E., and Captain Richards, R.N., to visit the locality, and take evidence for and against the proposal by parties interested, and the inquiry took place at Chester last week, as already stated. There was a formidable array of counsel present on the occasion, the promoters of the undertaking not only being represented, but also the River Dee Commissioners, the Great Western Railway Company, the Shropshire Union Railway and Canal Company, the Corporation of Chester, together with several traders on the river; all these several bodies appearing in opposition to the bridge being limited to 78 ft. in height.

The commissioners, at the close of the inquiry, said they should make their report to the Board of Trade, who would then give their decision.

## CONCENTRIC CIRCLED STONE CARVINGS IN IRELAND.

MR. THOMAS DREW, A.R.H.A., has sent to the Archæological Society of Ireland (late of Kilkenny), an account of concentrically incised stones found in the counties of Dublin and Wicklow. "Many," he remarks, "may not be aware that within easy reach of Dublin exist remarkable specimens scattered over a particular district. The district referred to is on the borders of the counties of Dublin and Wicklow, not far from Bray; and the stones bearing these inscriptions are found in the vicinity of sundry old churches, and used either as gravestones, or in the construction of the ancient building." One of them, we may remark, very much resembles what is called the "Spectacle ornament" inscribed on stones in Scotland, being double, and united together by a band. There is more symmetry about this, and another given in illustration, than is usual with concentric circled carvings.

## THE BLACKBURN FREE LIBRARY AND MUSEUM.

THE new Free Library and Museum, which has been in course of erection during the last eighteen months, is now nearly completed and ready for opening, and in connexion with the undertaking a liberal and generous act has just been performed. At a meeting of the library and museum committee held last week, Mr. Alderman James Thompson (the chairman) and the other members of the committee decided to carry out the additional carving required to complete the entrance-front in Francis-street, at their own cost, the chairman generously offering to defray half of the entire expense. The sculptural designs in Frances-street represent science, literature, and art, and contain altogether twenty-seven figures, executed in relief.

## PROPOSED NEW INFIRMARY BUILDINGS IN HACKNEY.

THE Local Government Board and the Hackney guardians are at issue on the question of erecting a new infirmary. The Local Government Board have decided upon the erection of a new infirmary, in order to effect a complete separation of the workhouse and infirmary, and placing each other under independent management and control; whilst the guardians are opposed to the proposal as unnecessary. The subject was warmly discussed last week at the meeting of the guardians, when Mr. Longley, one of the Local Government Board's inspectors, was present. In the course of the discussion the guardians protested against the proposed outlay, contending that by certain alterations which were now being effected in the arrangements of the workhouse, the sick would be kept entirely apart from the able-bodied, and that the ratepayers ought not to be put to the expense of 12,000*l.* or 15,000*l.*, which the erection of a new infirmary would cost. Mr. Longley admitted that what the guardians had done was good so far as it went, but that in his opinion it was essential that the infirmary should be under the entire control and management of a resident medical officer.

## ENGINEERS' PROSPECTS.

MR. HARRISON, the newly-elected President of the Institution of Civil Engineers, in his inaugural address, enumerated the engineering works recently constructed, at present in course of construction, or soon to be carried out, railways in India, Persia, and Egypt, and large irrigation works in the latter country; public works for the drainage, sewerage, and water supply of the city of Buenos Ayres, and the construction of docks at that place; the development of railways in Brazil and Uruguay, and in the empire of Japan; the new Amsterdam ship canal; the extension of the docks at Liverpool at an estimated cost exceeding 4,000,000*l.*, also at many other parts of Great Britain; bridges over the River Tyne at Newcastle, the estuary of the Tay above Dundee, the Firth of Forth, the railway bridge at Moerdyk in Holland, the International railway bridge over the River Niagara, near Buffalo, the East River Bridge between New York and Brooklyn, and the St. Louis Bridge over the Mississippi; the blowing up of the Blossom Rock in San Francisco Harbour; the tunnel through the Hoosac Mountain and the St. Gothard Tunnel; the use of concrete for a breakwater pier at the port of Douglas, and for a lighthouse tower upon a rock off the south-west extremity of Jersey; and the development of the telegraphic system generally. With respect to railways, Mr. Harrison observed that, having been for many years continuously in the habit of attending Parliamentary Committees, it was impossible to avoid contrasting the ancient Parliamentary practice of forty years ago with that which now existed, and in every point of view the result was in favour of the present practice. He trusted that the system of having a Court of Appeal to a Committee of the House of Lords from the decisions of a Committee of the House of Commons would never be altered, because he had known many cases where circumstances had unexpectedly arisen, which after being fully sifted before a second committee, had entirely altered the features of the case, and led to a reversal of the previous decision. It was too much the custom to assert that railway directors and railway managers and officials had no feeling, and that they looked to a saving of expenditure, in preference to seeking provisions for the public safety; but he had no hesitation in saying, that a more ungenerous and unjust charge was never made against any body of men. The public had no idea of the anxieties which attached to those connected with railway management. He had seen directors completely overcome on receiving a report of a railway accident; and from the few years' experience he had as a railway manager, nothing would have induced him to continue in office. So far from these gentlemen deserving the character attributed to them by the public, they ought to receive the greatest sympathy, for he could name men whose early deaths, or permanent ill-health, might be traced to the constant anxieties incident to their duties. Instead of economy governing the actions of directors, he could state from personal experience, that when it was clearly shown to them, by their responsible officers, that any improvement would tend to promote the safety of the public, they did not hesitate to adopt it. There was a popular delusion that the various recommendations made to the railway companies from time to time by the officers of the Board of Trade, such as the block system, interlocking of points, &c., were really inventions of those officers; whereas not one of those systems, or any new idea in connexion with the working of railways, had ever been suggested by them.

## A THOROUGHFARE MUCH NEEDED.

SIR,—An advertisement in the *Builder* of the 10th inst. invites tenders for two buildings to be placed on the vacant ground between Cannon-row and the Thames Embankment. This I conceive to be a great oversight of the Metropolitan Board of Works, as such building would block the way where a continuous road is much required from the Embankment to the corner of Bridge-street and Parliament-street, thereby relieving the latter from its overcrowded traffic while the Embankment itself is but little used. Let any person stand with his back to the Abbey and he will see at once that such a street is wanted to connect Victoria-street, without the detour by Westminster Bridge with a sharp angle, to the Embankment. The removal of six or eight houses between Cannon-row and Parliament-street, leases of which I believe are now expired, would complete the thoroughfare.

OBSERVER.

## BONDING COURSES.

SIR,—Is not the true reason for carrying iron hoop bond through window openings, to steady the piers between whilst they are yet green? I have had buildings with narrow tall piers between upper windows which would shake considerably whilst the roof principals were being fixed, were it not for the artificial aid of the hoop-bond running through the openings.

A useful bond is a continuous iron plate, 3 in. by $\frac{5}{16}$ in., with stubbs riveted in and projecting from the upper side, say an inch. Such a bond takes the place of a wood-plate for floor joists. The joists have to be prepared with a centre-bit hole at each end to fit on over the stubbs. Care must be taken to lay it perfectly level, as bricklayers are apt to be less careful in this respect with an iron plate than with one of wood.

X. X.

## THE TUNNEL UNDER THE MERSEY.

A NEW proposal has been made by Mr. W. Austen, C.E., for the construction of the tunnel under the Mersey between Liverpool and Birkenhead, the borings for which are now proceeding. Mr. Austen's plans include a triple-arch tunnel cut through the sandstone rock, which, he says, is water-resisting, and everlasting in its nature and consistency. Through this triple arch he would construct the tunnel of three separate and distinct "circular ring arches," of 30 ft. clear span, crossing beneath the Mersey river bed, in a straight line from Liverpool to Birkenhead, continuing from the Liverpool side, below the west-end of George's dock, up through the basement or under-side of Water-street and Dale-street (two leading thoroughfares into the town direct from the margin of the river), to convenient and proper places arranged for the entrances and exits of railways and roads, with communications and similar arrangements on the Birkenhead side.

## LONDON ANTHROPOLOGICAL SOCIETY.

THE first anniversary meeting of this Society was held at 37, Arundel-street, Strand, on the 20th inst. Dr. R. S. Charnock, F.S.A., president, in the chair. After reading the report of the council, which showed that the Society had met with considerable success, the president delivered the annual address. He dwelt upon some of the late philological theories, and showed that there was no affinity, grammatically or otherwise, between the Egyptian and Caucasian tongues, the Guarani, Abohass, and Agaw; the Asiánti (Ashantee) and Corean, and the Etruscan and Finnic-Tatar languages. He then considered (amongst other subjects) the late discoveries of human and other remains, including the Brüx skull, in different parts of Austria; Dr. Broca's theory of the enlargement of the brain concomitantly with education; Dr. Ferrier's experiments on the localisation of the functions of the brain; and concluded with a consideration of human progress, both physically, mentally, and morally. The ballot for the council for the year 1874 was then taken, and resulted as follows:—president, Dr. R. S. Charnock, F.S.A.; vice-presidents, Captain Burton, Drs. Barnard Davis and Inman, Messrs. Churchill and Wake; council, Drs. Beddoe, Harcourt, Holden, King, Leitner, Mitchell, Rev. P. Melia, D.D., Messrs. Atkinson, Avery, Carmichael, Harris, Lock; honorary secretary, Mr. A. L. Lewis; honorary foreign secretary, Dr. Carter Blake; treasurer, Dr. Kaines.

## MUNICIPAL ENGINEERS AND SURVEYORS.

SIR,—As an admirer of your journal permit me to offer a suggestion, which, if acted upon, would I feel sure give great satisfaction to a large number of its readers, viz., those gentlemen holding appointments as municipal engineers and surveyors. Your journal is the usual advertising medium for vacant appointments, and it would be very interesting were you to give afterwards, as far as possible, the names of the successful gentlemen and those selected for such appointments. A BOROUGH SURVEYOR.

*** We always willingly do so when informed of the result.

## THE NEW PUBLIC OFFICES AT PENGE.

THE Penge and Sydenham Local Board have approved of the designs for the new public offices which have been furnished by Mr. Elkington, the architect, and tenders for the construction of the new building are to be immediately invited.

The building will be in the Gothic style of architecture, the materials used being Kentish rag, with Bath stone dressings. In addition to the basement, it will contain the ground floor, and two stories above, surmounted by a tower. The basement will contain the cellars, and one portion of it will be appropriated for the heating apparatus. On the ground-floor, 12 ft. high, will be the general office, 28 ft. by 17 ft., together with a small office adjoining, 11 ft. by 9 ft.; also two strong-rooms, 6 ft. by 4 ft.; pay office, 8 ft. by 4 ft.; surveyor's office, 18 ft. by 17 ft., with private office adjoining, 11 ft. by 10 ft.; also a second surveyor's office, 19½ ft. by 16 ft., with a private office adjoining, 14 ft. by 10 ft.; also sewers surveyor's offices. One of the rooms set apart for the hall-keeper's residence will also be at the rear of the ground-floor, the other apartments consisting of two rooms in the floors above. The first floor will contain the Board-room, a large and spacious apartment, 46 ft. by 30 ft. The seats for the members will be circular in form, consisting of two rows raised one above the other, and will be arranged to seat forty members, in addition to seats for the officers.

## FOREMEN'S TIME.

AT the Middlesex Sessions, before Mr. Serjeant COX, George Goldthorp was indicted for obtaining 17*s.* from Edward Kerry, his master, with intent to defraud him of the same.

The prosecutor is a builder at Highgate, and the prisoner, a bricklayer in his employ, acting as foreman at the house of Colonel Angus Croll, at Roehampton, and his wages were 8½*d.* per hour. On December 6th, the prisoner handed to prosecutor his time-sheet up to Friday, the 5th, showing that he had worked fifty-six hours and a half, and he paid the prisoner 2*l.*, being 8½*d.* per hour for fifty-six hours and a half. Some short time afterwards, Potter, the plasterer, came up to be paid, and on the prosecutor asking him how the work was progressing, he said it was only going on very slowly, as the prisoner had not been there on the Monday, Tuesday, and Wednesday preceding. This statement being confirmed by another workman, the prosecutor went to the prisoner's house, and asked him to refund the money which he had been overpaid, but he refused to do so, and told him he might get it the best way he could. Prosecutor summoned the prisoner for obtaining money by false pretences. The prisoner afterwards called at the prosecutor's house, and offered to pay the overcharge and the cost of the summons, which was refused. He afterwards made a similar offer at the Police-station, where it was again refused. The case was heard at the Highgate Petty Sessions, and from there was sent to this court.

Mr. Ellis J. Davis addressed the Jury for the prisoner, and urged that, as the foreman of the job, he was entitled to charge by the week for his services, and not barely restricted to the hours he might have been upon the premises. He said that if there was any dispute as to the amount it was a matter for the County Court, and he hoped the jury would prevent a criminal court ever being used for such an unjust and improper prosecution.

Mr. Serjeant COX, in summing up, said builders must, of necessity, mainly depend upon their workmen for the duties to be performed; for, if they had to pay a person to watch the men at every job they had in hand, the sum would amount to almost the wages of the man, and such

an outlay would materially interfere with their profits. In this instance the prisoner had admitted that he had made an improper charge, or he would not have gone to the prosecutor and offered to refund the money he had been overpaid.

The Rev. C. B. Dalton, M.A., the vicar of Highgate, gave prisoner a good character for nineteen years.

The jury found the prisoner guilty.

The judge said he would take into account the good character the Rev. Mr. Dalton had given him; but, as his offence was a serious one, he must have a somewhat severe sentence, which was, to be imprisoned and kept to hard labour for six months.

## HOUSE AGENTS AND THE PUBLIC.

In the Court of Common Pleas, last week, an important house-letting case came before the Court, in regard to the evil practice of parties engaging more than one house-agent to sell or let premises.

The plaintiff, Mr. Neville, is well known in theatrical circles, and it appeared that he called upon the defendant, Mr. Nohill, agent, of Taunton-place, Regent's Park, and signed a memorandom to take No. 7, Boscobel-place, St. John's Wood, at a rental of 75*l.* per year, and also paid 30*l.* for fixtures. When Mr. Neville sent his servant with the furniture to take possession, the goods had to be taken away again, as Mr. Hacke, the owner of the house, had let it to Major Robinson, who was in possession.

The plaintiff now sought to recover back his 30*l.* for fixtures, and, in addition, for expenses incurred; and he further charged the defendant with fraudulently and falsely representing that he had authority to let the house in question.

It, however, transpired that several house-agents were trying to let the place, and some evidence was given tending to prove that the defendant had no authority to make a binding contract.

The defendant, upon this, put in a letter he had received from the landlord, Mr. Hacke, in which was written:—"In answer to your letter, the lowest amount I would take is 83*l.* for No. 8, Boscobel-place, eight years' lease, subject to the same conditions as I hold the place myself. Fixtures, 20*l.* The house is in a good state of repair, and the rooms will all be repapered when required. The No. 7 house is also to be 75*l.*, and 30*l.* fixtures."

Mr. Justice Brett said, after this letter there could not be the slightest ground for charging the house-agent with fraud.

Ultimately it was mutually agreed that a verdict for the plaintiff for 30*l.* on the money-count should be taken, and for the defendant, on the charge of fraud, each party to pay his own costs.

The Judge observed that both parties to this suit were perfectly innocent. If any one were to blame, it was Mr. Hacke, the landlord, or those who had advised him, because he had not acted in a candid way, but had negotiated with several parties at once. Mr. Neville was to be pitied, as well as the house-agent for being charged with fraud.

## VENTILATION OF SHEFFIELD MUSIC HALL.

SIR,—In the *Builder*, about three weeks since, I noticed a paragraph about the opening of the new Albert Music-hall, Sheffield. In speaking of the ventilation, you said it was *hoped* the vitiated air would pass off through the tower, or something to that effect (I have not the paper by me), and it struck me you had some doubt whether the coil of piping which I fixed in the tower, would draw away the foul air, and maintain an upward current; and I felt rather hurt that such a remark should come from you; for it is well known that I have carried out the warming and ventilating arrangements there, by many architects whose good opinion I value much, and the unfavourable impression they would receive by seeing the doubt expressed by the editor of the *Builder* on the success of my scheme I regret.

I knew at the time that it must answer, because I have had sufficient experience to prove it; and not only that, but I had it from the lips of thn architect himself, Mr. Flockton (who had been testing the ventilation), that the draught upwards in the tower caused by my pipes was sufficient to blow a candle out; but as you seemed to doubt it, I was determined to test the draught myself, and accordingly, when I was over in Sheffield, the other day, I went up to the top of the tower, and stood upon the coil of piping (which I have laid in the form of a flat gridiron, so as to cover the entire area of the shaft), and took out my handkerchief, and the draught carried it up the shaft. I was not only convinced of the efficiency of the ventilation, but I was surprised; for I did not expect to find such a strong current as I experienced. I wish you could either test the draught yourself or depute some one else to do so for you, as I know many people are dubious about thermo-ventilation, but here is a great proof of its efficacy. Not only that, but I should be glad if by any means I could induce you to correct the doubt you expressed, as I know it is not your wish to injure one who is a regular subscriber to your journal.

ROBERT RENTON GIBBS.

## ESTATE BUILDERS AND THE PUBLIC HOUSE LICENSING ACT.

SIR,—Soon after the Act of 1869, which empowered the licensing magistrates to grant or refuse beer as well as spirit licences, came into operation, I addressad a letter to you (which you kindly inserted) calling attention to the very stringent manner in which they exercised their powers, and to the great hardships and ruinous losses endured by builders of public-houses on new estates.

I think that a most favourable opportunity now offers itself for obtaining an alteration in the licensing system so as to remedy its unfair operation towards estate-builders, as I see that the Licensed Victuallers have just held a meeting at Birmingham of their National Defence League, at which delegates were present from all parts of the country, and that they have determined to introduce into Parliament, next session, a Bill to remove some of the harsh and objectionable clauses of the Licensing Act, 1872.

I believe that the main object sought by the promoters of the 1869 Act was the suppression of the miserable little dens that had grown up under the then existing Acts, and not to inflict grievous injuries and ruinous losses upon persons who built properly-constructed public-houses upon new estates for the accommodation of new neighbourhoods, and which would not interfere with the legitimate rights of any existing vested interest; and it is most unfair to induce persons to expend large sums of money, which, under an existing Act of Parliament, gave substantial value to the property, and then by another Act sweep away that substantial value without giving compensation or making any provision to prevent losses to the persons who had so confidingly invested their money.

As estate public-house builders have (at any rate perspective) an interest in common with Licensed Victuallers, I think it would be to their mutual advantage to co-operate, and by their united influence they might materially assist each other. In order to carry this into effect no time should be lost: an organisation should be immediately commenced, as Parliament will soon be sitting and the golden opportunity may be lost.

E. G. GRIMES.

## SCHOOLS OF ART AND OF SCIENCE.

IN accordance with the principles laid down by the minute of the 19th February, 1868, and having regard to the number of students taught in each school, the following sums have been awarded by the Lords of the Committee of Council on Education to the head masters of those sixty schools of art in which the general amount of work, as tested by examinations, was relatively most satisfactory:—W. H. Stopford, Halifax, 50*l.*; J. S. Rawle, Nottingham, 40*l.*; A. A. Bradbury, Hanley, 40*l.*; Charles D. Hodder, Edinburgh, 40*l.*; W. J. Muckley, Manchester (Royal Inst.), 30*l.*; W. Tucker, Kidderminster, 30*l.*; W. H. Sounes, Sheffield, 30*l.*; John Anderson, Coventry, 30*l.*; D. W. Raimbach, Birmingham, 30*l.*; Louisa Gann, Bloomsbury, 30*l.*; M. T. Lindsay, Belfast, 20*l.*; Robert Greenlees, Glasgow, 20*l.*; Joseph Harris, Salisbury, 20*l.*; G. Theaker, Burslem, 20*l.*; Edwin Lyne, Dublin (Royal Society), 20*l.*; Edward R. Taylor, Lincoln, 20*l.*; J. P. Bacon, Stoke-upon-Trent, 20*l.*; J. Snowden, Bradford (Mech. Institute), 20*l.*; W. C. Way, Newcastle-upon-Tyne, 20*l.*; A. Brophy, Westminster, 20*l.*; John Sparkes, Lambeth, 20*l.*; R. C. Puckett, Leeds (Mech. Inst.), 20*l.*; Alexander Fisher, Brighton, 20*l.*; George A. Stewart, West London, 20*l.*; W. Sturgeon, Leamington, 20*l.*; John Parker, St. Martin's, 20*l.*; John Bentley, Birkenhead, 20*l.*; T. C. Simmonds, Derby, 20*l.*; John Kemp, Gloucester, 20*l.*; Thomas Stephen, Northampton, 20*l.*

*West London School of Art.*—The annual meeting for the distribution of prizes to the successful students in this school has been held; Sir Thomas Chambers, M.P., in the chair. There was a numerous attendance both of students and their friends. The proceedings commenced with the reading of the annual report, from which it appeared that the numbers in the school were 494, being an increase of 17 over last year. The general studies had shown a steady improvement, and the examinations conducted by Government had resulted very favourably as regards honours, though not quite so high as last year. In the second-grade examinations 173 students presented themselves, of whom 134 were successful in passing. In the third-grade examinations the works of 286 students had been sent to South Kensington for examination and competition with the other schools of the kingdom, and the result was that 67 were declared satisfactory.

*The Manchester School of Art.* — The annual meeting and distribution of prizes in connexion with this school has been held in the Lecture Theatre of the Royal Institution. Mr. W. J. Muckley, the head master's report stated that the schools during the past year had been attended with more than ordinary success. The Very Rev. the Dean of Manchester presented the prizes and certificates, after which he addressed the students. The advice which he should start with, he said, was this,—the absolute necessity of labour in art as in all other things. Everybody knew that perseverance, diligence, careful attention to principles, in art, as in most sciences and in most manual occupations, were absolutely necessary to any great success. People were sometimes apt to draw a distinction between art and other occupations or pursuits. They thought a great deal too much about genius, and that there was some royal road to perfection. Now he wished genius to be put in its proper place by assuring them, on the authority of one whose name would carry universal approbation when he mentioned it, that in art, as in other things, diligence, industry, and attention to principles must precede any excellence. They should not leave one subject until they had perfectly mastered it. Labour was the principle of success in everything.

*Art Exhibition at Ryde.* — The committee of the Ryde School of Art, in order to raise a sum of money to aid the funds of the school, have obtained on loan from the resident nobility and gentry of the Isle of Wight a large number of paintings, drawings, and other works of art, which form an interesting exhibition. The Queen lent several pictures from her Majesty's private collection at Osborne; and the authorities of the South Kensington Museum have sent many paintings and drawings.

## THE ENLARGEMENT OF THE WATERLOO RAILWAY STATION.

AT a special meeting of the shareholders in the South-Western Railway Company, held last week, with reference to contemplated new works and stations, the chairman, referring to the proposed extension of the Waterloo Station, said that that terminus was only intended originally for a road-side station, as the terminal station was to have been at London Bridge, but that that intention was abandoned in consequence of the great expense it would have entailed. The Waterloo Station was, therefore, unfitted for a terminal station, although several additions had been made to it from time to time. Adverting to the enlargement of the station about to be carried out, he said that a very elastic general plan had been prepared for both the present and future requirements, so that portions of it might be erected from time to time without interrupting the traffic, until it was wholly completed as a terminal station. But an immediate extensive enlargement was absolutely necessary, inasmuch as the traffic had so much increased that it was dangerous to cross from the Windsor line to the main line, and they could not carry on the traffic without making considerable improvements. He, however, expressed an opinion to the effect that they could never make it a handsome station, although they might make it convenient for the public, and the working of the trains. The company have purchased land and buildings on the north side of the present station, upwards of one acre and a half in extent, for the purposes of the enlargement, and the works are immediately to be commenced. Respecting the other intended new works within the metropolis, he stated that they proposed to widen the northern side of the main line between the West London Extension Junction and the Clapham Junction, to facilitate the traffic, which was occasionally blocked there. This was in addition to the intended extension and enlargement of the station buildings at Clapham Junction. The traffic at Reading has become so large that the company are about to erect a new goods station there also.

## CHURCH-BUILDING NEWS.

*Leek.*—The chancel of St. Luke's Church has been enlarged, and now corresponds with its nave. It has been extended 10 ft. eastward, and its dimensions are 36 ft. in length, by 18 ft. 6 in. in breadth. The length of the church internally from the east wall to the west door is 137 ft. Considerable space has been gained in the nave near the chancel by the removal of the prayer-desk and choir-stalls that formerly stood there. The floor of the chancel has been laid with Minton tiles, and a reredos has been erected from a design by Mr. Sedding, of Bristol, architect. It is composed of Caen stone, and has been executed by Mr. Green, of Manchester.

*Hucknall.*—The parish church of Hucknall Torkard has been reopened to the public. During the time that it has remained closed for alterations, a change has been put upon its appearance. It is mainly, of course, on account of its connexion with the Byron family, and as the burial-place of the poet, that Hucknall Torkard Church owes its fame. Yet it possesses some features of archæological interest. The family vault is underneath the church floor, and the register mentions that no less than threescore of the family have been buried within the precincts. In the course of the restoration no interference has been made with any matters of a Byronian character, except two. Firstly, the little marble tablet, which commemorates Ada, has had to be raised a little, through the alteration of the door; and, next, the old pew of the Byrons has been swept away. The Duke of Portland, who is Lord of the Manor, started the list of subscriptions with a donation of 500*l.* Mr. Godber gave another 500*l.*, and the list was soon swelled to larger dimensions, and the contributions accumulated until the committee felt themselves in a position to commence active

operations. Messrs. Evans & Jolley were appointed the architects, and the contract was obtained by Mr. Booker, builder, Basford. The whole of the south aisle has been rebuilt, and the north aisle has been extended to the end of the tower, thus giving additional room in the interior. The pews and gallery have given place to open seats, and the pulpit is placed in an improved situation. There is a convenient vestry, and good accommodation for the choir. The seats are of stained deal, and the fittings in the chancel are of oak. A portion of the old wood of the porch has been left in, but the other parts are altered and improved. Bulwell stone has been chiefly used, but the stone dressings are from Ancaster. The tower has not been altered, except so far as the pinnacles are concerned. These parts having succumbed to the force of the wind, are being raised and rebuilt. The cost of the whole of the alterations is about 3,000*l.* The amount still needed for the building itself is about 450*l.*, and towards the payment of this sum subscriptions are solicited. The church will now accommodate about 450, whereas previously it would only seat about 300.

*Holt.*—The parish church of Plumstead has been reopened for divine worship, having been restored (principally by two ladies) at a cost of 700*l.* The church, which is dedicated to St. Michael and All Angels, is in the Perpendicular style, but previously to the work of restoration being commenced had fallen into a dilapidated state, the interior more resembling a barn than a place set apart for Christian worship, the ceiling being exceedingly rough and whitewashed, while the pews were the ugliest and most uncomfortable imaginable, the reading-desk, pulpit, &c., in an absolutely rotten state, and the windows mostly blocked up, with the exception of two small ones in the south wall, the mullions of which were of painted wood. The work of restoration has been carried out by Mr. Chapman, of Hanworth. The roof has carved angels at each principal. The seating of the chancel, the pulpit, lectern, reading-desk, and font-cover are of carved oak, and new windows have been inserted where required, and filled with cathedral glass. The west window, which was previously blocked up, is the gift of Mr. John Hales, of Holt. The floor is of coloured tiles.

*Sheffield.*—A meeting of the congregation of St. Marie's Church, Norfolk-row, specially convened by the rector, the Very Rev. Canon Walshaw, has been held in the Surrey-street schoolroom, the object of the meeting being to take the necessary steps for the erection of a peal of bronze bells in the tower of the church. Canon Walshaw addressed the meeting, and having reminded them that, twenty-five years ago, when the church was erected, it had been intended to place a peal of bronze bells in the tower, and that the tenor bell of the peal, weighing 22 cwt., was then purchased, and after its solemn consecration by the late bishop of the diocese, suspended in the belfry. The completion of the peal had been delayed by various circumstances, and latterly, from the fact of the bell-chamber being occupied by the steel bells placed there by Messrs. Vickers; and since they had now intimated their intention of removing them, he thought the time was come for the carrying out of their original intention, viz., the purchasing and erection of the remainder of the bells necessary for the completion of the peal. The rector stated that the Duke of Norfolk had generously offered to meet half the expense, on condition that the congregation would raise the other half; and further said that having recently had a sum of money placed at his disposal for the use of the church he would devote the sum of 50*l.* out of it, and would subscribe himself 10*l.* in addition to the same object. Mr. Hadfield proposed, and Mr. A. J. Ward seconded, that the duke's generous offer be at once accepted, and that the warmest thanks of the congregation of St. Marie's are hereby given to him. A committee of gentlemen was appointed for the purpose of raising subscriptions.

### The Marquis of Ripon on Church Work.

At a *soirée* of the Ripon Church Institute, held under the presidency of the bishop of the diocese, the Marquis of Ripon delivered an address upon "Church Work." His lordship referred especially to the great work which had been done in that diocese in the way of church building and restoration during the past decade, but pointed out that much remained to be done.

## DISSENTING CHURCH-BUILDING NEWS.

*Wolverhampton.*—The memorial stone of a new Wesleyan Chapel, to be erected on the Bilston-road, near the workhouse, has been laid by the mayor. The building will be 33 ft. wide by 100 ft. long, and the exterior will be a plain design, the object of the trustees being to meet the requirements of the locality without incurring heavy expense. The entrance-doors will open into a spacious vestibule, from which on either side will be staircases to galleries and lobbies to the body of the chapel. The interior of the chapel will be 50 ft. by 63 ft. long, and 33 ft. high from floor to ceiling. It is to contain sittings for 500 persons. There will be a minister's vestry, and three class-rooms and prayer-meeting room, with large schoolroom, 25 ft. by 50 ft. 9 in., over the whole. The woodwork will be stained and varnished. The architects are Messrs. Loxton, Brothers, of Wednesbury, and the builder is Mr. Daniel Evans. The total cost will be about 5,000*l.*

*Old Basford.*—The foundation stones of a new Wesleyan Chapel have been laid at Old Basford. The edifice that is now being built stands a short distance from the National Schools. Accommodation will be provided for 350, but the building will be so contrived that if necessary a gallery could soon be put in, to hold about 300 more. The dimensions are as follow:—Chapel, 51 ft. by 38 ft.; school-room underneath, 38 ft. by 28 ft.; band-room, 22 ft. by 15 ft.; in addition to which there will be vestries and other places erected. The chapel will be entered from the street by a spacious flight of steps, and along the front will run a low wall of Bulwell stone, with an iron entrance-gate at either end. The architect is Mr. Collyer, and the builder Mr. Andrews. The total cost is estimated at upwards of 1,800*l.*

*Bedford.*—A new Wesleyan Chapel has been opened here. The building, says the local *Times*, is situate at the suburb of Southend, where a colony has rapidly sprung into existence, and standing prominently at the junction of Offa-road with the Ampthill-road. Built of Warrington stone, with dressings of Bath, the entrance is at the north-east corner through a small tower, in which is placed a tablet, having upon it an inscription to the effect that the tower was erected in memory of the late Rev. John Moore. The tower is surmounted by a miniature spire of Bath stone. The edifice, which is fitted with open sittings to accommodate about 250 persons, is lighted at the north end by double elongated windows of white glass, with red-stained bordering and caps, and at the sides by ten smaller windows with the same mixture. An extended and enclosed platform serves as a pulpit, being approached by a pew-like door in the rear from the school-room, which is separated from the chapel by a curtain of crimson and black, over an arch. The building is warmed from beneath, and is fitted with gas-stars. The roof is supported by large open wood brackets, and the walls are stuccoed and pointed.

*Manchester.* — Hyde-road Chapel has been opened. The plan is transeptal, necessitated by the square form of the site, and the chapel is built in conjunction with the old school chapel which is now used entirely for purposes of a day and Sunday school. The roof is ceiled octagonally, the octagon form being intersected over each transept. Over the front gallery is a large five-light traceried window, and over each of the others grouped five-light lancet windows. A choir-loft is formed over the end of the nave. An arcaded porch opens to the ground floor, and separate staircases from the front enter to the galleries. Accommodation is provided for between 500 and 600 persons. The cost, including lighting and heating, is 1,880*l.* The builder is Mr. R. W. Bird, of Bradford, Manchester, and Mr. Fowden, one of the contractors of the Building Fund, kindly acted as clerk of works. The architect is Mr. Alexander Lauder.

*Buckley.* — The Buckley Congregationalists have provided themselves with a new chapel, with turret and gabled front of white pressed bricks. It looks over a swampy part of the mountain's crown, and contrasts strikingly with the almost funereal pall of smoke all around, which has blackened everything, not excepting the church in the distance. The approach was not the most desirable, but it has been improved by the making of a good cinder-path. The building is in the Gothic style. There are five long single-light windows, divided by buttresses, on each side, with a longer window in the front. Below that are two entrances, with inner vestibule, by which ingress to the body of the chapel and gallery is obtained by four separate doors. The gallery runs round the chapel, the front of it being coloured pink and gold, and in the place of panels open iron-work, coloured blue with gold stars. The whole of the woodwork is of pitch-pine, stained and varnished; the seats being open with sloping backs, and the pulpit with fret-work panels and dais. As there is no gas, the lighting will be effected by means of paraffine lamps with double wicks, the lamps being on standards affixed to the pews. For heating, Grundy's hot-air apparatus will be used. The building will seat 500 people comfortably; and as some of the congregation have to come from a distance, there is, in the rear of the minister's vestry, room for the stabling of three horses. The cost of the whole has been upwards of 1,600*l.*, the contract having been taken by Mr. John Williams, of Lane-end, who has carried out the work according to the designs of the architect, the Rev. Thomas Thomas, of Swansea.

## FROM SCOTLAND.

*Edinburgh.*—At a meeting of the acting committee of the subscribers to the Knox Memorial, the following resolutions were agreed to:—

1. That the committee limit their object to obtaining a marble statue of John Knox for Edinburgh, to be placed in a public building, whether church, or gallery, or hall, as may be afterwards found most eligible; and, should the funds at their disposal be sufficient, with an ornamental pedestal of appropriate designs, as sculptured basso-relievos.
2. That artists be now invited to prepare for public competition, before the month of May next, small models of the figure, accompanied with drawings or sketches for a pedestal, and an estimate of the probable expense, singly or together.
3. That these resolutions in the meanwhile be submitted for approval to parties who have already become subscribers to the Knox Memorial.
4. That the promised subscriptions be now paid.

——The completion of the infirmary buildings is more probable than heretofore, the managers, according to the *Weekly Scotsman*, being now in possession of sufficient funds not only to complete the contract for the medical house—on which about 40,000*l.* yet remain to be paid,—but to undertake the erection of the remaining buildings embraced in Mr. Bryce's plans.—— As regards the proposed extension of the Edinburgh University buildings, it is reported that the building committee has at length succeeded in coming to terms with various proprietors in the neighbourhood of Teviot-row, and have privately purchased property nearly opposite the new infirmary, on which it is proposed to erect class-rooms, chiefly for the accommodation of medical students. It is proposed to place in the immediate neigbourhood of the new infirmary, theatres, class-rooms, and laboratories, specially adapted to meet the requirements. The sum needed is 100,000*l.*, towards which the committee report that about 37,000*l.* have now been obtained by private subscription. It has been resolved to hold a public meeting in February, with the view of opening the subscription list to the general public.

*Leith.*—The Leith Harbour and Dock Commissioners have determined finally as to the acceptance of estimates for the proposed wet dock. At a former meeting, it had been resolved to remit three out of the estimates tendered to the dock engineers to be reported upon, and after full consideration of the engineers' report, the commissioners have now agreed to accept the estimate of Mr. James M'Naughton, Stewarton, Ayrshire, under whose contract the work connected with the undertaking will be commenced immediately. The contract price is about 220,000*l.*, being 15,000*l.* below the engineers' estimate, about 20,000*l.* below the tender of the contractor for the Albert Dock, and 60,000*l.* under the highest offer. It is anticipated that the new dock will be completed within five years.——A new swing-bridge across Leith Harbour has been opened. The bridge, which is of iron, cost 32,000*l.*, and weighs 750 tons. It contains two lines for railway-traffic and two roadways for foot passengers.

*Glasgow.*—The new fish-market in East Clyde-street, which has just been completed, has been formally opened by the Lord Provost, magistrates, and town council.

*Kinghorn.*—A species of typhus fever has been for some months prevalent in Kinghorn, a small seaport in Fifeshire, opposite Leith, on the Firth of Forth. This fever is manifesting no symptoms of abatement. A good

many fatal cases have occurred. The fever, at first confined to one neighbourhood, has spread throughout the village, and by latest accounts is affecting the country district. The visitation has aroused the authorities to look into the sanitary condition of Kinghorn. With the assistance of the Board of Supervision, the water in use for domestic purposes has been examined, and steps taken for the removal of nuisances and remedying what was found defective in the sanitary regulations.

*Alloa.*—A monument to the late Earl of Kellie has been placed in St. John's (episcopal) Church, Alloa. The monument, of which the leading figure is a recumbent statue of the deceased peer, has been designed by Mr. R. Anderson, and executed by Mr. Rhind. The lower stages of the structure consist of a moulded sub-base of black marble supporting a chamfered plinth of rich green marble, on which again rests a frieze of red marble, studded with alternate spar bosses and panels of white alabaster. The bosses present a fine variety of colour, and the panels are filled in with foliated ornament, relieved against a vermilion ground. Over the frieze rises a moulding in brown veined alabaster, and on this is placed the couch bearing the statue, which is designed after a type borrowed from the days of the first Plantagenets. The figure of the late Earl is extended at full length, with hands upraised as in prayer, the head reposing on a tasselled cushion, and the feet resting against a couchant lion. The figure is draped in a peer's robe, and on the exposed portions of the arms are seen the laced cuffs of a military uniform, which recalls the late Earl's connexion with the Indian army.

## STAINED GLASS.

*Oaken Church.*—A painted window has just been erected in the church at Oaken, near Wolverhampton, to the memory of his wife, by Mr. Neve, of Greenhills. It is a two-light window, and represents the spiritual and the worldly side of life. The former by a female figure in an attitude of devotion, and surrounded by clouds; the latter by a charming figure of Ruth carrying sheaves of corn, both being surmounted by rich ornamental work of flowers and leaves and quatrefoil, with flowers emblematic of purity. The work is from the studio of Messrs. O'Connor & Taylor.

*Dunfermline Abbey.*—Two elaborate memorial stained-glass windows for Dunfermline Abbey, by Messrs. Ballantine & Son, have been set up. They are triplets, and in the upper portion of each window have large Scriptural illustrations, while in the base of each light is a smaller subject. One of the windows is erected by Mr. Reid, of Iffley, Oxford, in memory of his parents, natives of Dunfermline. The chief subject is a representation of the family of Bethany. The sick Lazarus is laid on a couch, Mary is seated at the feet of Jesus, while Martha stands listening to Jesus, who is evidently leading their thoughts upwards. The apartment in which they are seated is Eastern in character. The scenes depicted in the smaller groups are Nicodemus's visit to Christ, Christ blessing little children, and the Supper at Emmaus. In the other window, which is erected by Mr. T. Alexander, Dunfermline, in memory of his father, mother, and other relatives, the upper portion contains the Baptism of Our Lord, who is represented as after having come out of the water. Above Him is the dove descending amid a luminous ray of light which radiates over the head of our Lord. On either side are John the Baptist, Mary, and Joseph. The scenes depicted in the base of the three lights are the Sower, the Good Shepherd, and the Woman touching the Hem of Christ's Garment.

*Northwold Church.*—A new east window of stained glass has been erected over the altar of this church, the gift of Miss Caroline H. Carter. The window consists of five lights. The centre one is occupied by the representation of St. Paul, with a drawn sword, and those on the right and left with figures of SS. Matthew, Mark, Luke, and John. The subjects in the window were designed and drawn by the Rev. Prebendary Sutton, rector of West Tofts.

*Knaresborough Church.*—A window has just been erected in this church, under the direction of the Rev. F. L. Fisher, in memory of his two brothers. The window is of three lights, with tracery openings of angels and emblems. The six subjects are:—The Calling of Simon and Andrew, Stephen the Martyr, Christ walking on the Sea, Peter letting down the Net, Timothy instructed, and Drawing the Net to Land. The window is from the studio of Messrs. O'Connor & Taylor, of London.

*Coniscliffe Church, Darlington.*—Five new stained-glass windows were unveiled in this church on Christmas-day morning. Four of the windows are situated in the nave, the subjects "Christ Blessing Children," "The Blind Restored to Sight," "Raising of the Widow's Son," and "The Woman touching Christ's Garment." The fifth window is in the chancel, the subject being "Our Lord's Entry into Jerusalem." The whole of the windows are the work of Mr. Baguley, of Newcastle. A short time ago the east window and three chancel windows were erected by the same artist.

*Bildestone Church, Ipswich.*—In memory of the late Rear-Admiral Cockburn, commander-in-chief in the East Indies, a stained-glass east window (21 ft. high and 12 ft. wide) has been erected in this church, the late admiral having for some years resided in the parish. The architecture of the window is in the Decorated style. In the tracery are introduced three panels, the uppermost and central one being of pentagonal form. In this upper and principal panel is represented Christ preaching from the ship near the shore of Gennesaret; in the others, St. Paul taking leave of the Brethren on the shore of Miletus, and the Vision of St. Paul in the ship in Adria. The lower compartments, which are five in number, are glazed with figured quarries relieved by bosses, and alternately by bands, bearing texts of Scripture. The form of the window was designed by Messrs. Goldie & Child, of London; and the workmanship has been executed by Messrs. Wailes & Strang, of Newcastle-on-Tyne.

*Llandyfrydog, Anglesea.*—On Christmas-day, a stained-glass window was unveiled in this church, and which has been erected in the chancel as a memorial of the late Mr. Edward Richards, Ynys, placed there by his widow and family. For many years he occupied the post of chairman of the Anglesea union.

## Books Received.

*The History of Freemasonry; from its Origin to the present Day.* By J. G. FINDEL. Second revised edition. With a preface by D. MURRAY LYON. London, &c.: Brother George Kenning.

THIS book is a strictly historical one, from which all seems to be excluded that is not based upon ascertained or probable fact. The tone of it may be gathered from the following passage extracted from the introduction:—

"The history of Freemasonry—long veiled in mystery, interwoven with legends, purposely distorted by misrepresentations—has, through the profound and conscientious researches of some few solitary and unprejudiced Brethren, acquired of late years a sure foundation upon scientific principles. This more especially refers to the origin of the Fraternity, concerning which, even to this very day, the most confused, ridiculous, and discordant opinions prevail. Blinded by absurd self-conceit and an eccentric desire to prove the extreme antiquity of the Institution, many have strenuously combated the idea that the Fraternity originated in the Operative Masons; or, seeing that the ancient symbolical marks and ceremonials in the Lodges bear a very striking resemblance to those of the mysteries of the Ancients, have allowed themselves to be deceived and led astray, imagining they can trace back the history of the Craft into the cloudy mists of antiquity. Instead of endeavouring to ascertain how and when these ceremonies were introduced into our present system, they have taken it for granted that they were derived from the religious mysteries of the Ancients. Each fancied resemblance or agreement with some symbol or pretended custom of the ancient mysteries, is considered as a safe guide, and a close connexion is immediately inferred, which not unfrequently involves an entanglement in unessential particulars, having not the slightest bearing on the subject.

The idea of Freemasonry is as old as human civilisation, having its source in the human heart, as language has its in the spirit. Therefore we find the idea of Freemasonry already existing in the remotest ages as a shadowy presentiment. Embodied in life, it acquired forms like the modern, and so we can find its traces in the Mysteries of the Ancients, in the Roman building corporations, and in the Mediæval Fraternity of Operative Masons. It is possible that the latter, with the knowledge of the rules and the secrets of the art of building, at the same time received some of their symbols and usages."

The author treats separately of the history of the craft in Scotland, England, Sweden, France, &c., and in America; and this English edition of the work is dedicated to the Grand Lodges of Massachusetts and Iowa, in the United States.

*The Local Government Directory, Almanac, and Guide, for* 1874. London: Knight & Co. Thirty-third Year.

THIS is a very useful work,—indispensable, indeed, to all interested in educational and sanitary subjects, for example, and to many others. Among the contents of the present issue are lists of Local Government Board, School Boards, School Districts, Schools and Institutions certified by the Poor-law Board, Reformatory and Industrial Schools; Urban, Rural, and Port Sanitary Authorities; Public Analysts, Burial Boards, Poor-law Board Unions, Asylums, and many more, including the more usual lists of Public Office holidays, terms, Courts of Equity and Law, Ministry, Royal Family, &c., and the almanac proper.

## VARIORUM.

"Proportions of Pins used in Bridges. By Charles Bender, C.E., Member of the American Society of Civil Engineers, &c. New York, Van Nostrand, 1873." This small volume forms one of Van Nostrand's science series. It is a useful treatise on an important subject as regards the strength of iron bridges. —— "The Aërophore and its Application to Mining Industry." By L. Denayrouze, Ancien Élève de l'École Polytechnique. The London Co-operative Printing and Stationery Co., Plough-court, Fetter-lane." This pamphlet gives an account of an invention which was recently noticed in the *Builder*, for enabling miners or others to enter and work in mines pervaded with choke damp, and also to carry with them the requisite light. M. Denayrouze has made it his business to rid the apparatus as he first took it up, of complicated features which had before checked the utility of the original invention of M. Ronquayrol, engineer of the mines at Firney. —— "The Sixth Annual Report to the Council of the Borough of Nottingham, by the Committee of the Free Public Library and Museum, 1872-3," congratulates the Council on the continued usefulness of the library and museum, and says:—

"Your committee are again compelled to report that the premises in which the Library and Museum are located are very inadequate and inconvenient. Nottingham falls sadly in the rear of other towns of the same extent in these respects. In fact, the usefulness of the institution is crippled to a very considerable extent by want of commodious buildings. The Lending Library, which is completely overcrowded with books, has also to serve the purpose of a news-room and reading-room. Although the space which your committee can afford for reading is only about 15 ft. by 12 ft., such is the great appreciation of this department that it is attended by about 300 persons a day. There are no places available for the students of the scientific and other works in the Reference Department. In many towns of less importance than Nottingham, spacious rooms are fitted up with tables and proper conveniences for the study of books of reference. The Reference Library now contains as many books as the state of the building will permit. The Patent Library is overcrowded with books. The librarian is compelled by want of shelf-room in this, as in the Reference Department, to place books on the floor, where they are in constant danger of being damaged."

——"The Australian Hand-Book and Almanac, and Shippers' and Importers' Directory, for 1874. Fifth year of issue. Gordon & Gotch, St. Bride-street, Ludgate-circus, London." Though it scarcely merits the name of a directory, this volume, besides, an immense mass of advertisements, contains a large quantity of useful matter relative to the Australian Colonies, and coloured maps of them all.——"The Home of the Agricultural Labourer, its Defects, and how to Remedy them. By Francis T. Bond, M.D., B.A., Medical Officer of Health, Gloucester. London: Simpkin, Marshall, & Co." The author of this pamphlet urges that deficiency, either quantity or quality, of accommodation, as the chief defect, cannot, in rural districts especially, be met by the ordinary laws of commercial supply and demand or by voluntary agencies; and that the only effectual remedy for it is to include houses for the accommodation of the labouring class in the permanent sanitary improvements which rural sanitary authorities are empowered to carry out, and to give the same facilities for effecting such improvements as now exist in the case of works for drainage, water-supply, and other similar purposes. The adoption of this remedy, he remarks, involves no new principle in legislation and no new machinery for its execution; the principle that the provision of sufficient house-accommodation for the poor is one of the proper objects of legislation being already recognised, directly, in the erection of workhouses, and, by inference, in the power which the law gives under certain circumstances to close up or even destroy houses that are not habitable; and the machinery also existing in the constitution of local sanitary authorities.——"Report of the Ramsgate Local Board on the proposed Ramsgate Deal and Minster Junction, Minster and Ramsgate Junction, and Ramsgate, Deal, and Dover Railways, by E. Ellice Clark, C.E., Engineer and Surveyor to the

Board. Ramsgate: printed by S. R. Wilson, Harbour-street." Mr. Clark reports in favour of the third of these proposed lines. Looking at it, he says, from all points of view, it is a far easier, more comprehensive, and altogether a better scheme than the other two; and he believes if it is carried out it will be a boon to the public, and of service to the town in many ways.

## Miscellanea.

**The Blue Gum-tree.**—Mr. J. Henry Rogers writes to us from Green Hedges, East Grinstead, Sussex:—"As many somewhat vague statements regarding the hardiness of the blue gum-tree and its influence over malarious diseases have lately appeared, the following facts may be considered worthy of being made known. I have at present growing in front of the cottage in which I reside, close to, but not nailed to, the west wall, several blue gum-trees. No. 1, planted in the spring of 1871, has survived two winters without protection; at 6 ft. from the ground it has a circumference of 7 in. Its height at present is only 15 ft., the upper portion having been torn off by wind. No. 2, planted in the spring of 1872, has survived one winter, also without protection of any kind. Its circumference, at 6 ft. from the ground, is 5½ in., and its height 18 ft. No. 3, planted in the spring of last year, has attained a height of 14½ ft. All these trees, and several smaller specimens of the same and nearly allied species, are at this present time in perfect health and vigour, and are quite uninjured by frost. That this tree is capable of resisting the cold of ordinary winters in sheltered situations of the south of England cannot be doubted, even when planted, as my specimens are, on a retentive clay. As regards its influence over diseases arising from malaria, I may mention that since the winter of 1850-51, when I had a very severe attack of malaria fever in Rome, I have been liable, especially in the autumn, to irregular aguish symptoms, but since my gum-trees have grown sufficiently tall to beat against the casement of my bedroom windows, I have not had any return of my very disagreeable sensations. A solitary case like this is, of course, open to various explanations and objections; but the fact remains."

**The Discovery at Troy.**—A razzia has been made on certain houses in the villages of Kalafatli and Yenisheir, whence Dr. Schliemann used to draw many of the labourers for his excavations on the supposed site of Troy. The result has been the discovery of a valuable treasure. It consists of necklaces, bracelets, earrings, and other ornaments, and bars of solid gold, weighing together several okes, according to the *Levant Herald*. It appears that these ornaments had been stolen by some of the workmen employed by Dr. Schliemann. The villagers intended to have had them melted in secret by native goldsmiths and converted into what they considered to be fashionable ornaments for their wives and daughters. The culprits have been imprisoned, and the property seized on account of the State. The discovery cannot fail to be satisfactory to all parties concerned (the thieves excepted). Dr. Schliemann has now the clearest proofs to back him in refuting the invidious assertion to the effect that the gold ornaments of which he had announced the discovery at Troy, had been previously manufactured under his personal directions by a goldsmith at Athens. The Turkish government has also an opportunity of recovering to some extent its legitimate share of the antiquities found by the doctor—who forgot this part of his engagement, and carried off to Athens everything of value which he was fortunate enough to find. Lastly, the scientific world will now be enabled to pronounce upon the true nature and probable age of this most interesting, long-buried treasure.

**Breaches of Agreement by Builders on the Walworth Common Estate.** — Several of the builders, who from time to time purchased plots of land on the Walworth Common Estate, have failed to carry out the agreements into which they entered by not completing buildings within the time stated, and the Newington Governors and Guardians, as the trustees of the property, have in several instances retaken possession of sites and unfinished buildings. At the meeting of the Governors last week they decided to re-enter upon twelve plots, six of which are in Faraday-street, and six in Westmoreland-road.

**The Late Mr. Thomas Shave Gowing.**—Ipswich has lost, by the death of this gentleman, an energetic, liberal, cultivated citizen. Mr. Gowing was well known in the town from having for some years taken a prominent part in public affairs, for which his talents and extensive general knowledge highly qualified him. His upright, uncompromising, disinterested conduct won him the respect of all, and even those who differed mostly from him felt he was perfectly honest in his convictions. On many points where he failed to convince his opponents time has proved him to be correct in his views. The mechanics institution was a child of his own, and he devoted himself for years to the promotion of its interests. In literature his sympathy was with the best; in art he had considerable knowledge, and some executive power and training; but the latter quality was more exhibited in landscape gardening than in any other pursuit in which he engaged. Mr. Gowing may be said to have introduced an improved and superior style of landscape gardening to Ipswich and its neighbourhood. The Upper Arboretum was almost entirely his work. Mr. Gowing might be seen for many years working at the improvement of the Public Arboretum, and to his last hour he took a deep interest in the place. In earlier life we knew him intimately, and have always entertained high regard for his character and attainments.

**New Warehouse in Gloucester.**—Messrs. Wait, James, & Co. (corn merchants, of Gloucester, Bristol, and Birmingham), have had erected as an addition to their establishment the largest warehouse in the port, says the local *Chronicle* It has been appropriately called the "Great Eastern," in reference to its position on the eastern shore of the basin. The "Great Eastern" is 114 ft. long, by 66 ft. broad, is six stories high, and will contain over 25,000 quarters of grain. It is built of brick, with freestone heads and cills. There are thirty-three iron columns, supplied by Messrs. J. M. Butt & Co., on each floor, supporting beams of pitch pine. Improved corn-shoots are provided throughout the building. The winches, supplied by Messrs. Seekings & Co., are fixed so as to provide ample ventilation for the men while working them. The ground-floor is laid with asphalte, by Messrs. Bradshaw & Co., of Bristol. The cost of the entire building will be a little over 7,000*l*. Mr. Capel N. Tripp, of Gloucester, is the architect, and Mr. Albert Estcourt, of Gloucester, the builder. Messrs. Wait & Co. have entertained the workmen engaged in the erection of the warehouse to a substantial meat tea in the St. Nicholas school-room.

**An Aquarium for Margate.**—We understand there is a project on foot for the construction of an aquarium, winter-garden, ferneries, and a recreation promenade upon a large scale. The work will commence at Cold Harbour, and pass round Fort Point to the flagstaff point on the Fort Promenade, and will be carried out by a limited liability company, the capital being 15,000*l*. It is expected that Messrs. Cobb & Co. will be the local bankers. The promoters only await the final consent of the Board of Trade; and in all probability the work will be commenced early in the spring, being concluded at about this time next year. We hear that the plans were to be placed before a special meeting of the Council. Mr. R. Laird, the promoter of the Cliftonville Railway and other works in Thanet, is the promoter of the scheme. A sea-wall will be constructed throughout the whole length of the Promenade, a large area of land being thus reclaimed. The aquarium will be 250 ft. by 100 ft., and will be connected with a large hall 150 ft. by 70 ft., for concerts and balls.

**The Plans for New Infirmary Hospital at Warrington.**—Three architects of the town appear to have been invited to compete for this building, and the committee, after a short time, for consideration, selected one from the three, as best adapted to the purposes in view. According to a correspondent of the local *Guardian*, a builder of large experience has given it as his opinion that only one of the three competing designs, and that not the selected one, could be built for the sum specified. This correspondent offers apparently reasonable objections to the alleged shortcomings of the selected design. In so limited a competition, could not some competent and disinterested architect have been called in to decide, amongst the plans offered, which, if any, it was advisable to adopt?

**Trades Guild of Learning.**—A statement, drawn up by the Council of the Trades Guild of Learning describes at great length the objects which are contemplated by the organisation. It states that its purpose is to provide education for workmen (1) in the sciences underlying their respective industries, and (2) in various branches of higher education; and that it has sprung spontaneously from the workmen of this country, and its responsible direction will devolve in the main on them, with the support of others who can undertake to advise and help in their educational work. It will accept of no aid from the State, but will make use of the national universities as the best source of general education for the people of the great towns, enabling them to acquire, not only the results of scientific research, but the most thorough and scientific methods of teaching.

**Atmosphere of Assize Courts.**—At the conclusion of the county court business in the Crown Court, at Derby, the judge remarked on the bad atmosphere in which the business of the Court had to be transacted. For the past seven years he had sat in that Court, and had made several complaints about it, and the judges of the superior courts, who had also complained innumerable times, had been compelled to endure the stench for many years. He had to endure it three days in one month, and he could only say, without exaggeration, that he regarded the stench as extremely prejudicial to health, and it had such an effect on him that it was exceedingly difficult for him to transact the business of the court. It affected his head. That such a state of things should be allowed to continue is shameful. The judges ought to refuse to act until the evil which disables them from doing their duty efficiently is remedied.

**Sanitary Matters in Hackney.** — Since the appearance of our recent notices of the sanitary condition of different portions of the district of Hackney, the local press of the township have devoted considerable space in supplementing our observations, not alone by republishing our articles *in extenso*, but in urging the necessity of remedial and efficient measures of sanitary reform. A word of commendation is due both to the local *Express* and the *Gazette* for their independent conduct; for instances are not rare wherein we have had to combat the reckless denials of local organs. We are sanguine that good must result from the honest advocacy we have alluded to, and that Hackney, before the close of the present year, will show an improved condition.

**The Leicester Flood Scheme.**—The committee appointed by the town-council of Leicester to examine and report upon the two schemes patented by local gentlemen for the prevention of floods, have examined the models;—one, Messrs, Goldsmith & Dilkes's, in the Gas Office, Leicester; and the other a working model, that of Mr. J. F. Smith, at the brook in Stoughton-lane. Flood-gates were in this model balanced by a float, which opened the gates as the float was raised by the rising flood. The whole thing seemed simple and efficient, and Mr. Smith insisted that expense of putting down these gates in the river to replace the permanent weirs is a mere trifle in comparison with the cost of the proposed lowering the bed of the river, and he feels confident that by his scheme he could save the town enough money to build a new town-hall, after preventing any further floods in Leicester. The two schemes are under the careful consideration of the committee of the council.

**The Death of the Surveyor of Marylebone.**—A large and influential committee of residents in Marylebone, with the Rev. C. J. Phipps Eyre (rector) as chairman, Mr. Edmund Boulnois as treasurer, and Mr. W. E. Greenwell (vestry clerk) as honorary secretary, has been formed to consider the distressing position in which the family of the late Mr. Browning, the surveyor to the parish, has been left by his almost sudden and untimely death. Mr. Browning has left a widow and seven young children in very straitened circumstances, and it is to be hoped that, as the vestry are unable legally to make any grant, a liberal response will be made to the appeal for subscriptions, which will shortly be issued by the committee.

**Messrs. Cassell & Co.'s Premises.**—By a slip the first stone was said to have been laid by Mr. Petter and Mr. Cassell. It should have been Mr. Petter and Mr. Galpin. Mr. Cassell has been dead many years.

**A Students' Library.**—An excellent idea is being realised at 24, Bride-lane, Fleet-street, close to Ludgate-hill, in the formation of a students' lending and reference library. The first general catalogue of English works has been issued, and although in some of its departments it is little more as yet than a skeleton, in others it already contains a good many useful and important works. The library is intended to extend the benefits of the subscription circulating system to all classes of students, and particularly to architects, art students, divinity students, examination students, law students, professional students generally, science students, and students in general of all descriptions. The terms are moderate: annual, first-class subscription for one volume, one guinea; second, half a guinea; special one guinea and a half.

**The Houses of Parliament.**—In anticipation of the opening of Parliament next week but one, certain alterations have been made in the interior, together with some decorations, more particularly applying to the House of Commons. During the recess a new staircase has been constructed for the use of members of the Lower House who may be sitting on committees when the division-bell rings. Up to last session members on committees had a long way to go down to the main staircase to reach the House in time to vote. The new staircase has been constructed in the committee-room corridor, near the spot where, until recently, the dining-room stood, and will bring members close to the door of the house in little more than a minute.

**Art and Antiquities.**—On Thursday in last week, Mr. Charles Tindal Gatty, the assistant curator of the Mayer Museum, Liverpool, delivered the first of two lectures on the subject of "Art and Antiquities," at the Free Library, in connexion with the course of free lectures now being delivered there. Mr. Thomas Holder occupied the chair, and, in introducing the lecturer, expressed his satisfaction at seeing present a very large audience. He thought that such an interest as was manifested in science lectures would render it shortly necessary for them to be held in a larger room than they had at present. Mr. Gatty then proceeded with his lecture.

**Dublin School of Art.**—During the vacation an exhibition of the works of the students of these schools has been on view, having been opened by his Excellency the Lord Lieutenant and the Countess Spencer. The display is remarkable as being the finest that has yet been witnessed in Ireland, and its magnitude is so great as to fill completely the galleries and rooms of the large building in which it is located. The works are interesting in a high degree, as showing the rapid progress that has been made in every department of study, from the matured system of study now in practice, and as administered by Mr. Lyne.

**Dangers of Level Crossings.**—At Kingston-on-Thames an inquest has been held on the body of Mrs. Davidge, who was knocked down and killed by a pilot-engine, at a crossing near the Teddington Station of the South-Western Railway. It transpired that, some years ago, at the instance of the Local Board, a signal-box had been placed at this crossing, and a man appointed to take charge of it, *but that he had been removed*. It was also shown that the speed of the engine was thirty miles an hour. The jury found that the company were to blame for leaving the crossing in so unprotected a state, and recommended that a bridge should be built over it.

**Accidents.**—The roof and front wall of a billiard-room behind the Red Lion Hotel, Church-street, Preston, fell in recently. The room had just been fitted up with two billiard-tables, each worth 60*l*. It appears that the roof, being somewhat too heavy, pressed the upper portion of the wall outwards into the yard of the hotel, and the flying splinters of wood and brick have injured the back windows of the Conservative club-room. The total damage is estimated at about 500*l*.——In the Rue Saint-Brice of Claimmorois, Rheims, a house in course of construction has fallen in, and buried in the ruins eight workmen. All were got out—four seriously injured.

**Donor of the Holborn Statue.** — The rumour which attributes this gift to Mr. Oppenheim, is without foundation. We shall not be surprised to learn that the donor is Mr. McKenzie.

**The Manchester Society for the Promotion of Scientific Industry.**—The Earl of Derby took the chair at the inaugural meeting of the Society with the above title, which was lately formed at Manchester, and of which he is the president. The meeting was held in the Manchester Town-hall, and was very largely attended by gentlemen connected with the manufactures and commerce of the district. The Earl of Derby delivered an excellent opening address, which has already been extensively quoted by our contemporaries.

**Warming and Ventilating Schools at New York.**—In the *World*, a New York paper, Mr. Lewis W. Leeds gives "a little practical advice to the New York School Commission" on this subject; and, according to Mr. Leeds, they stand much in need of it. "Every village carpenter," he says, "improves on the New York plan." Mr. Leeds rightly warns his readers against over-heating in the warming of such buildings, warmed air being comparatively of a debilitating nature.

**Sidmouth.**—The second contract for drainage of the town of Sidmouth was commenced on Wednesday, the 21st inst.; the contractors are Messrs. Hammett & Stephens, Plymouth; the length of sewers about 2,200 yards; the work will cost 1,100*l*. Mr. John Dunning, of Middlesbrough and] Sidmouth, is erecting new gas-works in the town of Sidmouth, and is applying to the Board of Trade for a provisional order for powers to construct piers and landing-places, &c.

**Warwick Castle.**—Good progress is being made in the restoration of Warwick Castle. The great hall, which was completely gutted by the fire that occurred two years ago, is in an advanced state of renovation, and the relaying of its marble floor will shortly commence. The asphalte roofs substituted for those destroyed are nearly complete, and preparations for redecorating the dismantled apartments exhibit satisfactory progress. Mr. Syer, of London, is still at work upon the ancient armour.

**Kettering Sewerage.**—The plans prepared by Mr. R. W. Johnson, the surveyor to the Board, have been approved by the Local Government Board, who have also sanctioned the application for a loan of nearly 7,000*l*. for carrying out the same. The sewage, after being carried nearly a mile below the town, will be dealt with by precipitation and filtration, after which the effluent water can be used for irrigation, if the occupiers of land near the outfall desire it.

**Admiralty Draughtsmen.**—"Special Regulations" for the open competitive examinations for the situation of draughtsman in the Admiralty have been issued. The examination takes place on the 17th of February, and will be in practical geometry, map and chart projection, topographical plan-drawing, and translation from French, Spanish, or some other modern language. The salary begins at 150*l*. and ends at 400*l*.—"*Rambler*" *in* "*Sydenham Telegraph*."

**Steam Ploughs and County Bridges.**—At the Bedfordshire Quarter Sessions a resolution was carried, on the motion of Mr. James Howard, M.P., to place all the county bridges in a suitable condition for the passage over them of road locomotive engines and steam ploughs. The work is to be done by degrees, the necessary funds being borrowed and spread over a number of years.

**Royal Architectural Museum.** — The drawings and models for the prizes offered by the Goldsmiths' Company for designs for plate, are now being exhibited in this Museum; admission free. The art-workmen's evening drawing and modelling classes are in full work at seven o'clock every Monday, Wednesday, and Friday evening.

**The Law of Conspiracy.**—On Monday evening, the 26th inst., Mr. Rupert Kettle will read a paper at a meeting of the Social Science Association to be held at their Rooms, in the Adelphi, "On the Law of Conspiracy as affecting the Relations of Employers and Employed." The chair will be taken at eight o'clock by Mr. Fitzjames Stephen, Q.C.

**Hove Commissioners.**—On Thursday, the 15th inst., the newly-formed incorporated commissioners of Hove elected Mr. S. A. Robinson, of West Hartlepool, to the office of surveyor. Mr. Ellice Clark, C.E., of Ramsgate, being second. There were fifty-eight candidates.

**Revolution Indicator for Ships.**—The Gold Medal of the Society of Arts, or 20*l*., is offered for the best "Revolution Indicator," which shall accurately inform the officer on deck, and the engineer in charge of the engine, what are the number of revolutions of the paddles or screw per minute, without the necessity of counting them.

**New Bank Premises for Derby.** — The foundation-stone of new bank premises has been laid in the Market-place, Derby, for Messrs. Samuel Smith & Co. The architect is Mr. George Robinson Isborn. The contractors are Messrs. John & James Edward Wood; and Mr. Albert Barrett is clerk of the works.

**South Stockton Board of Health.** — Mr. James Hall, C.E., assistant borough surveyor, Tynemouth, has been unanimously elected surveyor to the South Stockton Local Board of Health. There were 96 applicants for the appointment.

## TENDERS

For alterations and additions to new shop fronts, for Messrs. Hatherly & Pinder. Mr. B. H. Nunn, architect:—

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|---|---|
| Colwell | £700 0 0 |
| Cheesman & Co. | 690 0 0 |
| Bruton | 680 0 0 |
| Lockyer | 620 0 0 |
| Parsons | 615 0 0 |
| Lynn & Son | 588 0 0 |
| Nash & Co. | 568 0 0 |
| Patching & Webber (accepted) | 565 0 0 |

For the erection of head quarters for the First Hants Artillery Volunteers, Southampton. Mr. W. H. Mitchell, architect:—

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|---|---|
| Stevens | £1154 0 0 |
| Chapman | 1110 0 0 |
| Dyer | 1079 0 0 |
| Nichols (accepted) | 1027 0 0 |

For fittings to King's Arms Hotel, Liverpool. (Contract No. 2). Messrs. T. E. Murray & G. H. Thomas, architects:—

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| Wilkinson & Adams | £540 0 0 |
| Cheetham (accepted) | 539 0 0 |

For additions to Mansion, Blackmore End, Kimpton, for Mr. R. B. Baxendale. Mr. George R. Isborn, architect:—

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| John J. Gilmour | £678 0 0 |

For the erection of a warehouse in Cow Cross-street, Clerkenwell, for Mr. Oertling. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett:—

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|---|---|
| Patman & Fotheringham | £3980 0 0 |
| Adamson & Sons | 3792 0 0 |
| Killby | 3770 0 0 |
| Scrivener & White | 3636 0 0 |
| Bayes & Ramage | 3590 0 0 |
| Browne & Robinson | 3485 0 0 |
| Elkington (accepted) | 3400 0 0 |

For stable and coach-house, Wyndham-mews, Upper Montague-street, for Mrs. Beggs. Mr. C. E. Wray, architect. Quantities by Messrs. Lindell & Giffard:—

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| Crab | £380 0 0 |
| Richard | 377 0 0 |
| Kennemont | 360 0 0 |
| Anley (accepted) | 357 0 0 |

For new front, &c., and bar-fittings, at the Unicorn public-house, Covent-garden, for Mr. Whelpdale. Mr. W. E. Williams, architect:—

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| Hart | £735 0 0 |
| Anley (accepted) | 704 0 0 |

For new shop-front and alterations, at 45, Ludgate-hill, for Messrs. Sheerwood & Verney. Mr. W. E. Williams, architect:—

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| Deard | 647 0 0 |
| Hayward | 624 0 0 |
| Anley (accepted) | 589 0 0 |

For new warehouses, City-road. Mr. J. W. Reed, architect:—

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|---|---|
| Downs & Co. (accepted) | £2360 0 0 |

For two cottages, Barkby Grange. Mr. R. W. Johnson, architect:—

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| Neale & Son | £516 0 0 |
| Cotton | 431 0 0 |

For six houses in Newman-street, Kettering. Mr. R. W. Johnson, architect:—

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| Bellamy & Wilson | £1158 0 0 |
| Shurmur | 1092 0 0 |
| Margetts | 1077 0 0 |
| Henson | 1032 0 0 |

For farms standing in the Six-hills estate. Mr. R. W. Johnson, architect:—

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| Waite | £826 10 0 |
| Glover | 735 0 0 |
| Barnes | 629 0 0 |
| Chapman | 625 10 0 |

For eight houses at Kettering. Mr. R. W. Johnson, architect:—

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| Glover | £1550 0 0 |
| Manley | 1265 0 0 |
| Barlow | 1300 0 0 |
| Shurmur | 1440 0 0 |
| Henson | 1100 0 0 |

For new chapel at Codsall. Mr. J. R. Veall, architect:—

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| Trow & Sons (accepted) | £500 0 0 |